

Report On
Procurement Risk Management in Digital Entrepreneurship
and Ecosystem Development (DEIED) Project
(A World Bank Funded Project)

By

Md. Nurul Islam
Student ID: 20382020

**An internship report submitted to the BRAC Institute of Government and
Development (BIGD) in partial fulfillment of the requirements for the degree of
Masters in Procurement and Supply Management**

BRAC Institute of Governance and Development (BIGD), Brac University
April 2022

© 2022. Brac University
All rights reserved.

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.

Student's Full Name & Signature:



Md. Nurul Islam
Student ID: 20382020

Supervisor's Full Name & Signature:



A N M Safiqul Islam
Director (Admin & Finance), Bangladesh Hi-Tech Park Authority
Information and Communication Technology Division
Ministry of Post, Telecommunication, and Information Technology

Letter of Transmittal

Shah Eyamin-UI Islam
Faculty Member
BRAC Institute of Governance and Development
BRAC University
66 Mohakhali, Dhaka-1212

Subject: Submission of a report on the “Procurement Risk Management in Digital Entrepreneurship and Ecosystem Development (DEIED) Project (A project funded by the World Bank) of Bangladesh Hi-Tech Park Authority.

Dear Sir,

This is my pleasure to submit a report on “Procurement Risk Management of Digital Entrepreneurship and Innovation Eco-System Development (DEIED) Project (A World Bank Funded Project) of Bangladesh Hi-Tech Park Authority (BHTPA), Information and Communication Technology Division, Ministry of Post, Telecommunication and Information Technology, Government of the People Republic of Bangladesh.

I have attempted my best to finish the report with the essential data and recommended proposition in a significant compact and comprehensive manner as possible.

I trust that the report will meet the desires.

Sincerely yours,



Md. Nurul Islam
Student ID: 20382020
BRAC Business School
BRAC University
Date: April 7, 2022

Non-Disclosure Agreement

This agreement is made on November 20, 2021 and entered into by and between Bangladesh Hi-Tech Park Authority (BHTPA) and the undersigned student at Brac University Md. Nurul Islam, SID No. 20382020.

NOW THEREFORE THE PARTIES HEREBY AGREE AS FOLLOWS:

Md. Nurul Islam, a student of Brac University will collect and collate data, prepare a report on “Procurement Risk Management of Digital Entrepreneurship and Innovation Ecosystem Development (DEIED) Project (A World Bank funded project) and will submit to Brac University for partial fulfilment of Masters in Procurement and Supply Management (MPSM) degree, and hence all required support will be provided by Bangladesh Hi-Tech Park Authority (BHTPA) for preparing the report.

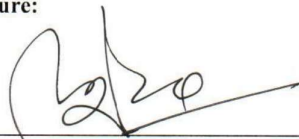
5. I/We have acknowledged all main sources of help.

Student’s Full Name & Signature:



Md. Nurul Islam
Student ID: 20382020

Supervisor’s Full Name & Signature:



A N M Safiqul Islam
Director (Admin & Finance), Bangladesh Hi-Tech Park Authority
Information and Communication Technology Division
Ministry of Post, Telecommunication, and Information Technology

Acknowledgement

I would like to express my sincere thanks to Project Director, Deputy Project Director, Assistant Project Director, the project personnel, the consultants, the procurement team of Bangladesh Hi-Tech Park Authority, and other related personnel for letting me work on this report. I am very grateful to them for their support in completing this report through providing data, attending the meeting, FGD and other SWOT analysis.

Primarily, I would like to thank Almighty Allah for being me able to complete this report with success. Then, I would like to express my sincere thanks and gratitude to my respected Teacher Mr. Shah Eyamin-Ul Islam, Faculty Member, BIGD, School of Business, Brac University, 66 Mohakhali, Dhaka-1212 for his guidance, encouragement, advice and continuous support to complete this report.

Secondly, I would like to express my sincere thanks to A N M Safiqul Islam, Director (Admin & Finance), Bangladesh Hi-Tech Park Authority, under whose guidance I have prepared the report. His suggestions and directions have helped in the completion of this report.

Finally, I would like to thank my wife and friends who have helped me with their valuable suggestions and guidance and have been very helpful in various stages of report completion.

Md. Nurul Islam

SID 20382020

Executive Summary

Public procurement is one of the government activities most vulnerable to corruption. In addition to the volume of transactions and the financial interests at stake, corruption risks are exacerbated by the complexity of the process, the close interaction between public officials and businesses, and the multitude of stakeholders. Public institutions as well as state-owned enterprises need to procure goods, services and works to carry out their responsibilities and duties. The total volume of public procurement, which is the government activity of purchasing goods, services and works, accounted for 12% of GDP and 29% of general government expenditure in OECD countries amounting to EUR 4.2 trillion in 2013. The share of public procurement at the subnational level represents 63% of the general government procurement in OECD countries. From the above data it is clear that most risk prone area of public activity is the public procurement.

An initiative has been undertaken to develop a procurement risk management framework in a World Bank funded project of Bangladesh Hi-Tech Park Authority (BHTPA), which will also fulfill the reporting obligation of Master in Procurement and Supply Management (MPSM) under BIGD of BRAC University, Bangladesh.

The name of the project is: Digital Entrepreneurship and Innovation Eco-System Development (DEIED) Project. The project is the 4th component of Private Investment and Digital Entrepreneurship Development (PRIDE) Project of World Bank. The component 1, 2, and 3 are implemented by Bangladesh Economic Zone Authority (BEZA) of Prime Minister Office. The DEIED component is consist of large, medium and small types of procurement packages of Goods, Works, Non-consulting and Consulting Services. As per the World Bank procurement risk ranking, the project is ranked as “Highly Risk” Project.

The report covers the introduction about the project in the chapter 1, review of related literature in the chapter 2, procurement risk management framework of DEIED project in the chapter 4, way forward in the chapter 4 and all other related information in Appendix.

The review of literature stated that there are huge procurement risks in public procurement throughout the world, out of which mostly in the African countries due to lack of risk management framework in the organizations and projects.

Based on the information a procurement risk management framework has been developed in DEIED project in line with The World Bank Operation Risk Management Framework and Procurement Risk Management Framework of ADB. The procurement risk management framework of DEIED project consist of context of risk, risk identification, analyzing the risk, developing risk management framework, implementation strategy of the framework and monitoring the risk management framework. The risk management framework also consists of business continuity plan and disaster response plan. A list of identified risks in DEIED project with risk rating, consequences and their management strategy has been incorporated in appendix.

Keywords: Risk; Management; Procurement; Framework; Probability and Occurrence.

Table of Contents

Declaration.....	Error! Bookmark not defined.
Letter of Transmittal	Error! Bookmark not defined.
Non-Disclosure Agreement	iv
Acknowledgement.....	v
Executive Summary	vi
Table of Contents	viii
List of Tables	x
List of Figures.....	xi
List of Acronyms	xii
Glossary	xv
Chapter 1 Introduction.....	1
1.1 Background	1
1.2 Objectives of the report	3
1.3 Scope of the report.....	4
1.4 Methodology	4
Chapter 2 Risk in Procurement: Evidence.....	6
2.1 SCM & Public Procurement: Understanding the risk manageme	7
2.2 Public Procurement: Lack of integrity.....	17
2.3 Public Procurement: Categories of risks.....	19
2.4 FAIR Risk Condition: Unstable and fragile risks.....	27

2.5 Procurement Risk Management Processes: Different perspectives	28
Chapter 3 Procurement Risk Management Framework in DEIED Project	39
3.1 Establishment of Context	40
3.2 Assessment of Risk.....	41
3.3 Risk Analysis.....	48
3.4 Evaluation of Risks.....	48
3.5 Risk Management.....	49
3.6 Setup of Risk Monitoring and Review Provision.....	51
Chapter 4 Risk Management Plan in DEIED Project	54
4.1 Development of Procurement Risk Management Strategies	54
4.2 Development of Risk Register	56
4.3 Preparation of Operation/Business Continuity Plan	56
4.4 Preparation of Disaster Recovery Plan.....	57
Chapter 5 Way Forward	58
References	60
Appendix A. Risk Evaluation, Rating, Treating, Monitoring Framework.....	70
Appendix B. Risk Management Committee.....	78
Appendix C. Risk Register	79
Appendix D. Operation/Business Continuity Plan.....	80
Appendix E. Disaster Recovery Plan.....	81

List of Tables

Table 1: Categories of Risk.....19

List of Figures

Figure 1: Integrity in the procurement processes.....	18
Figure 2: Seven common types of risks in public procurement.....	21
Figure 3: The black swan.....	25
Figure 4: The procurement risk management framework of ADB.....	28
Figure 5: Public procurement cycle.....	37
Figure 6: Public procurement processes.....	38
Figure 7: Risk management framework in DEIED project.....	39
Figure 8: Risk analysis using Probability vs Impact Matrix.....	48
Figure 9: DEIEDP risk management cycle.....	49
Figure 10: Risk management strategy in DEIED project	54

List of Acronyms

Short Form	Abbreviation
ADB	Asian Development Bank
AFP	Armed Forces of Philippines
BEZA	Bangladesh Economic Zone Authority
BHTPA	Bangladesh Hi-Tech Park Authority
BIGD	Bangladesh Institute of Governance and Development
BSMSN	Banga Bondhu Sheikh Muzibur Rahman Shilpo Nagar
CC	Corruption Commission
CIPS	Chartered Institute of Procurement and Supply
CMU	Country Management Unit
CoST	Construction Sector Transparency Initiative
COVID-19	Corona Virus ID -19
CPI	Corruption Perception Index
DBA	Doing Business As
DEIED	Digital Entrepreneurship and Innovation Eco-System Development
DPP	Development Project Proposal
EU	European Union
EUR	Euro

FA	Financial Agreement
FAIR	Factor Analysis of Information Risk
FGD	Focus Group Discussion
FIFA	Fédération Internationale de Football Association
GCC	General Condition of Contract
GDP	Gross Domestic Product
HOPE	Head of Procuring Entity
IMPPM	International Master's in public Procurement Management
ISO	International Standard Organization
IT	Information Technology
ITES	Information Technology Enable Services
MPSM	Master in Procurement and Supply Management
OECD	Organization for Economic Co-Operation and Development
ORAF	Operational Risk Assessment Framework
PAD	Project Appraisal Documents
PCC	Particular Conditions of Contracts
PDO	Project Development Objectives
PMO	Prime Minister Office
PPP	Public Private Partnership

PPR	Public Procurement Regulations
PRIDE	Private Investment and Digital Entrepreneurship
PSC	Public Service Commission
SCM	Supply Chain Management
SCMR	Supply Chain Management Review
SMU	Sector Management Unit
SQL	Structured Query Language
STD	Standard Tender Documents
STEEPLED	Social, Technological, Economical, Environmental, Political, Legal, Ecological and Demographical
SWOT	Strength, Weakness, Opportunity, and Threats
TEC	Tender Evaluation Committee
UK	United Kingdom

Glossary

Bid Rigging Risk	Bid rigging is a fraudulent scheme in procurement auctions resulting in non-competitive bids and can be performed by corrupt officials, by firms in an orchestrated act of collusion, or between officials and firms. This form of collusion is illegal in most countries.
Black Swan	A black swan is an unpredictable event that is beyond what is normally expected of a situation and has potentially severe consequences. Black swan events are characterized by their extreme rarity, severe impact, and the widespread insistence they were obvious in hindsight.
Business Continuity Plan	Business continuity may be defined as "the capability of an organization to continue the delivery of products or services at pre-defined acceptable levels following a disruptive incident", and business continuity planning (or business continuity and resiliency planning) is the process of creating systems of prevention and recovery to deal with potential threats to a company. In addition to prevention, the goal is to enable ongoing operations before and during execution of disaster recovery. Business continuity is the intended outcome of proper execution of both business continuity planning and disaster recovery.
Disaster Recovery Plan	A disaster recovery (DR) plan is a formal document created by an organization that contains detailed instructions on how to respond to unplanned incidents such as natural disasters, power outages, cyber attacks and any other disruptive events.
Entrepreneurship	Entrepreneurship is the creation or extraction of value. With this definition, entrepreneurship is viewed as change, generally entailing risk

beyond what is normally encountered in starting a business, which may include other values than simply economic ones.

Framework		A framework is a particular set of rules, ideas, or beliefs which you use in order to deal with problems or to decide what to do.
Fronting Policy	Risk	A fronting policy is a risk management technique in which an insurer underwrites a policy to cover a specific risk, but then cedes the risk to a reinsurer. Fronting policies, which are a type of alternative risk transfer (ART), are most commonly used by large organizations.
Innovation		Innovation is the practical implementation of ideas that result in the introduction of new goods or services or improvement in offering goods or services. ISO TC 279 in the standard ISO 56000:2020 defines innovation as "a new or changed entity realizing or redistributing value
Integrity		Integrity is the practice of being honest and showing a consistent and uncompromising adherence to strong moral and ethical principles and values. In ethics, integrity is regarded as the honesty and truthfulness or accuracy of one's actions. Integrity can stand in opposition to hypocrisy, in that judging with the standards of integrity involves regarding internal consistency as a virtue, and suggests that parties holding within themselves apparently conflicting values should account for the discrepancy or alter their beliefs.
Procurement Cycle		The Procurement Cycle can be defined as the cyclical process of key steps when procuring goods or services for the organization.
Risk Management Framework		The Risk Management Framework is a template and guideline used by companies to identify, eliminate and minimize risks. It was originally

developed by the National Institute of Standards and Technology to help protect the information systems of the United States government.

Risk Register

A risk register is a document used as a risk management tool and to fulfill regulatory compliance acting as a repository for all risks identified and includes additional information about each risk, e.g., nature of the risk, reference and owner, mitigation measures. It can be displayed as a scatterplot or as a table.

Chapter 1

Introduction

1.1 Background

The ISO Guide 73:2009 (last revised in 2016) defines risk as the effect of uncertainty on objectives and defines as an effect as a deviation from what is expected-positive and/ or negative. An organization will be continually affected, to greater or lesser extent, by the strategy it follows, the decision it makes, the action of its employees, and connected stakeholders, and changes taking places in the outside world. As organizations are not able to foresee the future, uncertainty will always be high, which could be a good or bad thing.

Effective risk management plays a crucial role in any company's pursuit of financial stability and superior performance. The adoption of a risk management framework that embeds best practices into the firm's risk culture can be the cornerstone of an organizations' financial future. The key takeaways for a procurement risk mitigation framework are:

- Risk is a reality for business owners and managers regardless of the industry sector or size of the company/organization.
- Well-run companies/organization will have a comprehensive risk management/mitigation framework in place to identify existing and potential risks and assess how to deal with them if they arise.
- Risk identification, measurement, mitigation, reporting and monitoring, and governance are of an effective framework.

Procurement is a key function of any organization, public or private and in an era of globalization with the advent of entrepreneurial organizations, management of purchasing and supply in private as well as in public sectors has gained more prominence. Moreover, with

increasing focus and debates on governance issues, especially fraud and corruption, the functions of purchasing and supply requires capacity building to acquire and implement international standard procurement practices with transparency and integrity. With that context in mind, Brac University designed a Master's programme on Procurement and Supply Management. In order to partial fulfillment of Masters in Procurement and Supply Management (MPSM) Degree, A report on the **“Procurement Risk Management Framework”** in the Digital Entrepreneurship and Innovation Eco-System Development (DEIED) Project (A Project Funded by The World Bank) has been assigned by the BIGD, Brac University Bangladesh.

The Digital Entrepreneurship and Innovation Eco-System Development (DEIED) Project is one of the components of **Private Investment and Digital Entrepreneurship (PRIDE) Project**. The PRIDE project aims to promote private investment and job creation in economic zones and digital entrepreneurship in hi-tech parks. The project has spearheaded the adoption and mainstreaming of green industrial park concepts in the implementation and development of economic zones in Bangladesh. The project has four (4) components:

- Component 1: Creating an enabling environment for private investment, sustainability & jobs;
- Component 2: Developing a greener and resilient BSMSN (Bangabandhu Sheikh Mujib Shilpa Nagar);
- Component 3: Creating a dynamic private market for serviced industrial land
- Component 4: Strengthening “The Digital Entrepreneurship and Innovation Ecosystem.

The fourth component is being implemented by DEIED Project of BHTPA. It aims to strengthen the foundation of the digital entrepreneurship and innovation ecosystem in Bangladesh. It is creating the country's largest agglomeration of IT and ITES companies and

promote digital entrepreneurship more broadly among young professionals and women. Out of the four components, the first three components are being implemented by Bangladesh Economic Zone Authority (BEZA) and the fourth one is being implemented by Bangladesh High-Tech Park Authority (BHTPA). The project consists of 17 goods procurement packages, 12 works packages including to large works packages, 17 consultancy service packages and 3 non-consulting packages. Most of all the consultancy services related to firm selection are large packages, international and very complex in nature with very limited number of firms in the market.

DEIED Project is responsible for developing and strengthening PPP model in Information Technology (IT) and Information Technology Enable Service (ITES) sectors. More than 90% of the projected fund is allocated for procurement of goods, works, consulting and non-consulting services. As per the World Bank risk rating, this project is one of the **“High Risk”** rated projects.

1.2 Objectives of the Report

The DEIED project is one of the “High Risk” rating projects of Bangladesh among the World Bank Funded projects, especially related to the procurement as more than 90% of the cost is allocated for procurement of goods, works, services, and non-consulting services. So, an attempt has been undertaken to find out the procurement risks of the project, analyzing the risks, rating of the risks, suggesting risk management approaches and development of a long-term plan for addressing the procurement risks for the whole project period. The report has been anchored on the objectives stated below:

- To find out the possible procurement risk areas and associated elements, consequences, probability of occurrence and severity of impact;

- To analyze the risks using “Risk Matrix” and identification of the possible severity of impact;
- To suggest risk control mechanism through development of “A Procurement Risk Mitigation Framework” for the project;
- To suggest an “Additional Risk Treatment Approach” for the “Black Swan”;
- To develop an “Action Plan” for mitigation and monitoring of procurement risks including the “Black Swan”.

1.3 Scope of the Report

Nevertheless, the scope of the report is limited within the DEIED Project boundary, and especially the procurement section of the project. It includes the (1) internal elements: project personnel engaged in the procurement directly or indirectly, the related personnel from the Bangladesh Hi-Tech Park Authority (BHTPA), staffs and other associates; (2) external element: the suppliers, vendors, contractors, the political people, and other interested stakeholders. The approved Development Project Proposal (DPP), the Financing Agreement (FA) between The World Bank and Bangladesh Government, the Proposal Appraisal Document (PAD), the Project Operational Manual were analyzed to find out the probable risk and risk mitigation recommendations. The World Bank Procurement Regulations, Fourth Edition, November 2020 and Public Procurement Act 2006, and Public Procurement Regulations 2008 are also the part of this report regarding compliance risks issues.

1.4 Methodology

An effective risk management framework seeks to protect an organization's capital base and earnings without hindering growth. Furthermore, investors like the World Bank are more willing to invest in public organizations with good risk management practices. This generally

results in lower borrowing costs, easier access to capital for the public organization, and improved long-term performance. To ensure the development of a practical and situational risk mitigation framework for the project following methodologies were followed:

1. **Review of project related documents:** Project related documents like Development Project Proposal (DPP), the Project Appraisal Document (PAD), the Financing Agreement (FA), the Project Operational Manual, the Procurement Regulations of the World Bank, Fourth Edition, November 2020, the Public Procurement Act 2006, the Public Procurement Regulations 2008, and related Standard Tender Documents (STDs) of World Bank and Bangladesh.
2. **Review of Literature:** Related literatures were reviewed to check and verify the completeness of the procurement framework are in place. The review of literatures was done in relation with understanding the procurement risks in public procurement, corruption in public procurement and associated risks, risk type and its implication with procurement cycle and risk mitigation processes.
3. **Analysis of Risk Identification Tools:** Different risk identification tools like, STEEPLED, Focus Group Discussion (FGD), SWOT analysis, personal interview, meeting with project personnel and the World Bank were adopted and analyzed to identify the risks associated with the procurement of the project.
4. **Review of Special Documents:** The following special document related to risk mitigation framework was reviewed and incorporated in the report:
 - a. Procurement Risk Framework, Guide Note on Procurement, Asian Development Bank, 2018.
 - b. Guidance notes on the Operational Risk Assessment Framework, Risks to Achieve Results, Operations Policy and Country Services, July 1, 2011.
 - c. CIPS Risk Tools Guidance Notes, Jarvis Grove, 2020.

5. **Use of Risk Matrix:** Risks were identified, analyzed/evaluated, prioritized, categorized, and proposed for a situational “Risk Management Framework” for the project.
6. **Preparation of Risk Action Plan:** A flexible but comprehensive action plan for risk monitoring and taking immediate action was developed using risk management template of risk register.

Chapter 2

Risk in Procurement: Evidence

The chapter mostly covers with literature review, which is an overview of the evidence on “Risk Management” mostly in Public Procurement as the report is concerned with the “Risk Management Framework” in a public organization. The term “Literature” can refer to a full scholarly paper or a section of a scholarly work such as a book, or an article. Either way, a literature review is supposed to provide the researcher/author and the audiences with a general image of the existing knowledge on “Procurement Risk Management” in Public Sector Project. The evidence of risk management in Public Procurement are illustrated below:

2.1 SCM and Public Procurement: Understanding the Risks Management

Risk management in Supply Chain Management (SCM) involves understanding risks that can impact on organization and implementing strategies to mitigate and management those risks. Managing risk in the supply chain continues to be a challenge for procurement professionals and this has been heightened by the Covid-19 pandemic. Procurement must focus on increasing transparency across their supply chains, increasing traceability and enabling them to proactively:

- Identify risks and prioritize
- Evaluate risks
- Manage risk
- Minimize risks and
- Contingency planning.

Managing supply chain risk is key for organization to become more resilient and responsive and get a strategic advantage over the competitors. Risk mitigation and management can be

done in number of ways: internal and external audit of supply chain risks and strong contingency planning (CIPS, 2013).

Effective identification and measurement of the public procurement risk is important as the basis of efficient risk management and risk prevention (Lei, Donghong & Tie, 2009). Procurement risk can be viewed from a transactional viewpoint (CIPS, 2013). Lei et al., (2009) indicated that the procurement process is exposed to risk during the different transactions that occur between the buyer, supplier, and other market factors. Public procurement is subject to increased critical observation aided by technology. Ambe and Badenhorst-Weiss (2012) added that prior to 1994, public procurement in South Africa was directed to massive, developed contractors and this made it challenging for small and medium enterprises to participate in public procurement processes.

The inefficiencies of the procurement function have led to limited visibility for supply chain managers regarding where their products and services originate from and where they are consumed (Coetzee, 2015). People living with disabilities spent R26.4 billion in 2010 in ways that conflicted with laws and regulations. The Institute for Security Studies public protest and violence map recorded that 25 percent of the protests and industrial strikes were owing to poor services in January 2013 and December 2014 interval (ISS Crime Hub, n.d.). The SCMR (2015) commented that the high incidence of service delivery protests is indicative of the dissatisfaction that people feel regarding the quantity or quality of public services. The massive problem is that sum amount of money is spent but services are not delivered, services for which the money was intended. Owing to the substantial public spend on goods and services procured by the public sector, there needs to be visibility of the processes followed in order to identify and mitigate any wasteful expenditure that might be avoided.

Mofokeng (2012) commented that the negative publicity regarding public sector procurement indicates the following perceptions:

- Widespread disobedience with the laws/regulations.
- Poor public sector procurement systems.
- Inferior risk management processes in procurement.
- Lack of transparency, irresponsibility, unethical behavior and inconsistency.
- Non-responsiveness to public pursuit.
- Misuse of public resources and inadequate service delivery.

This clearly indicates that the general population has the perception that corrupt procurement practices are evident and widely prevalent in the public sector in different locations and settings (probably not all locations or settings, since there may be fortunately still many good, honest and ethical public servants).

Ntayi, Ngoboka and Kakooza (2012) identified procurement related risks as:

- **Corruption:** Corruption in public procurement occurs when a specific supplier is consistently favored in order to enrich the favored supplier.
- **Kickbacks:** A kickback is a payment made by the supplier to the public official who influenced the selection process, after being rewarded a contract and receiving payment for the contract
- **Bid rigging:** Bid-rigging is a form of corruption and occurs when the bidders eradicate competition by increasing prices, this results in the government paying more and ultimately bearing the costs of the bidder. This can be achieved through a variety of ways from when competitors withdraw a bid from the application, to when a competitor chooses to submit bids only in certain geological areas or only to particular public organizations (The Organization for Economic Co-operation and Development, 2009).

- **Fronting:** When a company does not disclose the relationship with the influence of public officials involved in awarding a contract, fronting occurs and the public officials benefit financially through the front company.

In response to the above, the study proposes to investigate, describe, and critically evaluate the various procurement related risks the public sector is faced with.

2.1.1 Public Procurement: Corruption & Associated Risk

Public procurement is one of the government activities most vulnerable to corruption. In addition to the volume of transactions and the financial interests at stake, corruption risks are exacerbated by the complexity of the process, the close interaction between public officials and businesses, and the multitude of stakeholders. Public institutions as well as state-owned enterprises need to procure goods, services and works to carry out their responsibilities and duties. The total volume of public procurement, which is the government activity of purchasing goods, services and works, accounted for 12% of GDP and 29% of general government expenditure in OECD countries amounting to EUR 4.2 trillion in 2013. The share of public procurement at the subnational level represents 63% of the general government procurement in OECD countries (OECD 2013).

Although it is difficult to measure the exact cost of corruption due to its hidden nature, it has been estimated that between 10-30% of the investment in publicly funded construction projects may be lost through mismanagement and corruption (CoST, 2012), and estimates of 20-30% of project value lost through corruption are widespread (Wells, 2014; Stansbury, 2005). The Construction Sector Transparency Initiative (CoST) also estimates that “annual losses in global construction through mismanagement, inefficiency and corruption could reach USD 2.5 trillion by 2020” (CoST, 2012). Within the European Union, corruption more generally is estimated to cost €120 billion per year (European Commission, 2014a), which represents approximately

1 % of the EU GDP and represented slightly less than the annual budget of the EU in 2014, which amounted to €143 billion (European Commission, 2014b).

Specific public sector departments have been under public scrutiny following the media headlines reporting mismanagement, corruption and failure of financial systems (Kanyane, Houston & Sausi 2013). South Africa ranks 61 out of 168 countries based on the perceived levels of public sector corruption (Transparency International, 2016). The Corruption Perceptions Index (CPI) ranks countries or territories based on how a corrupt country's public sector is perceived to be. However, corruption is not the major obstacle to achieving transparent and effective procurement instead, "poor performance in the public sector officials who are politically inclined (lack of political will), is the major cause of government not achieving its governmental policies" (Derek Luyt quoted by Kanyane et al., 2013).

In other manner, the lack of political will from local government leaders or politicians to enforce honest and ethical procurement practices and principles is apparently sinking from the top to local government level where local operators appear to feel that- if they get a chance, "They will nor can until caught". Quintal (2016) reported on News24 that a local mayor in Beaufort West was caught conducting corrupt procurement practices and was simply admonished with a R10 000 fine after his disciplinary hearing by the ruling party. In addition, he was not dismissed but retained his post as mayor of the city (Quintal, 2016). Little wonder then that procurement corruption at local and municipal level is yet to be eradicated. Kanyane et. al. (2013) identified corruption as the main threat, which affects all tiers of public service (national, provincial and local) as an obstruction to the transformation of a country. Neupane, Soar and Jianming (2012) stated that corruption in public procurement leads to lack of accountability; lack of control; lack of political control and inappropriate procurement practices.

2.1.1.1 Corruption Risk Factors

Corruption can manifest during any of the stages that occur during the public procurement process, which Neupane et al. (2012) listed as: project planning; project design and documentation; tender process; contract awarding and accounting and auditing. In earlier research, Ware, Moss, Campos and Noone (2011), stated that the procurement is exposed to corruption during advertising, prequalification, and administration and supervision. According to the Supply Chain Management Review (SCMR, 2015) “the public SCM cycle has three essential phases: pre-tender, tendering and post-tender”. The question then begs to be asked: “At which phase does the most public procurement corruption happen: at the pre-tendering phase (giving ‘inside information’ to friends or family for kickbacks or ‘a cut’ on the awarded tender contract). Furthermore, Supply Chain Management Review (SCMR, 2015) states that at the tendering phase (direct the adjudication or selection process in a certain direction towards a friend or family members proposal (RFQ/ RFP) or in the post-tender process (you will get the contract but please note the following ‘kick-backs’ to me are expected once awarded)”. The SCMR (2015) illustrated that the pre-tendering procurement phase consists of initiating the project, gathering information, specifying the requirement and developing the strategy to approach the market. This is a crucial phase where information may be misused by the corrupt procurement officials to influence the outcome of the bid. The tendering phase presents its own areas of risk during the bidding process where fronting may take place or collusion during negotiation and contract awarding. Lastly, the post-tender stage provides an opportunity to monitor the financial health of suppliers, the aspects influence the willingness of suppliers to participate in collusion with procurement officials.

2.1.1.2 Forms of Corruption

Collusion: During the pre-tender phase, a procurement official may disclose confidential information to favor supplier regarding a tender, placing the supplier in an advantageous position compared to other suppliers competing for the contract (Neupane et. al., 2012). The motive for a procurement official taking part in collusion is personal financial gain received from the selected supplier upon payment from the tender. The SCMR (2015) provided the following example as an illustration of collusion in public procurement: - Collusion among construction companies tendering to build World Cup stadiums. “An investigation conducted by the Competition Commission (CC) prompted by increased construction and upgrading cost revealed that the construction companies involved with the 2010 FIFA World Cup took part in alleged prohibited practices relating to collusion between a number of major construction companies.” (AFP, 2014:n.p.).

Fraud: Baciú (2013) stated that fraud in public procurement is any dishonest behavior of the suppliers involved in the tender. This is because fraud can take many forms from senior procurement officials planning unnecessary projects for their private benefits, (Neupane et. al., 2012) to suppliers being dishonest regarding the costs associated with fulfilling the contract.

Unauthorized expenditure: Unauthorized expenditure in public procurement is defined by the Auditor General (2015) as “expenditure that was spent out of scope from the approved budget”. Skenjana (2014) stated that in certain instances officials have intentionally approved payments or appointment of service providers that went beyond their signing powers. For instance, a case where money was spent beyond the scope of the approved budget, to transfer to the emergency relief fund during a drought, would still be deemed unauthorized but not necessarily unethical.

2.1.2 Public Procurement: Bid Rigging Risk

It is common knowledge that corruption in the form of collusion in the public sector procurement is widely affecting the ethical way of contracting for goods and services. The amount of bid rigging activities taking place in the public sector procurement has led an organization like Economic Cooperation and Development (OECD) to implement procedures for preventing or possibly mitigating the risk of bid rigging in the public sector procurement (OECD, 2009 and 2012).

2.1.3 Public Procurement: Fronting Risk

Fronting is another risk which related to the public sector procurement, and it is widely believed to be affecting the efficiency of the public sector procurement for achieving its policy objectives. Kapdi and Sulaiman (2015) noted the following non-exhaustive list of practices as identified in the BEE Act that will be regarded as fronting practices:

- **Window-dressing:** Window-dressing refers to practices in an organization which prevent black people from partaking in core activities of the enterprise.
- **Benefit diversion:** This simply refers to the practice where economic benefits which were received as a result of the BEE status of an organization are not directed to black people in the ratio specified in the contract document.
- **Opportunistic intermediaries:** Relate to agreements in which the terms and conditions were negotiated on unfair and unreasonable basis with another organization as a means of enhancing an organization's BEE status. The question is therefore: "Does BEE procurement requirements promote "fronting?"; in other words, the black owned companies are awarded other than non-owned businesses, which benefit more from the contract at a higher cost.

2.1.4 Public Procurement: Contracts Risk

Huntchison and Pretorius (2014) defined a contract as an “agreement entered by two or more persons with the intention of creating a legal obligation”. In light of this definition, it is understood that for an agreement to be binding, it should be recognized by the law as legal. Various other requirements must be satisfied together with the agreement. However, the label ‘contract’ is in practice not reserved for agreements that succeed in creating binding obligations. Even if one or more of the requirements for validity are not present, the contracts fail (Huntchison & Pretorius 2014). Huntchison and Pretorius (2014) further stated that agreements entered into public sectors or state organizations are not straight forward agreements as they present their own fair share of contractual difficulties, any other ordinary contracts. An example of the risk associated with public sector procurement contracts is when a contractor who has been awarded a contract sub-contract more than 25 percent of the contract value to another enterprise which does not have an equal or higher BEE status level. Also, the Public-Private Partnerships (PPP) mitigate associated business risks because it promotes joint development activities, which cater to both the public and private sectors. As such, large green projects can be implemented that neither the public nor the private sector can achieve on their own because of their limited financing or technological options (The Global Green Growth Forum, 2012).

2.1.5 Public Procurement: Kickbacks Risks

Kickbacks refer to a bribe that influence a decision-making process of awarding procurement contracts. A payment of a kickback is normally done by a supplier to public officials who then after receiving such payments have an obligation to give an undue advantage to that particular supplier (Business-anti-corruption, 2014). The Public Service Commission (PSC) (Albert, 2011) found that 11 types of corrupt activities were common between the period of September

2004 and June 2010 from phone calls logged with the National Anti- Corruption Hotline. The PSC found 720 cases of procurement irregularities in the two public bodies, nine national departments and three provincial governments were randomly selected for audit. Procurement irregularities occurred in the form of deviation from policies and procedures when awarding tenders. Nepotism was a common practice for buyers awarding contracts to friends and family or rigging tenders in exchange for kickbacks (Albert, 2011).

2.1.6 Public Procurement: Incompetency of staff

Public sector officials and servants are required as part of the general procurement guidelines to be accountable and to report on their procurement processes. Openness and transparency in administration is considered to be a fundamental component of accountability. A study conducted by Soomo and Zhang (2015) on the private partnership failures suggests that the financial instability of the suppliers may have a negative direct impact on the public sector; this may lead to consequences of not obtaining VFM.

2.1.7 SCM and Public Procurement: Relationships with Suppliers

Supply chain professionals rely on external suppliers to the public sector to deliver the required goods and services in order to satisfy public sector needs. Erridge and Greer (2002) stated that one of the means adopted by the UK to increase interdependence and shared power between the government and its suppliers in achieving the demands of the global economy is the development of a strategic approach to public procurement by emphasizing coordination and long-term relations with suppliers.

2.1.8 Public Procurement: Internal Controls

Ambe and Badenhorst-Weiss (2012) suggested that public procurement has been accepted as a profession that plays a crucial role in managing public resources effectively. Ambe and Badenhorst-Weiss (2012) further state that numerous countries worldwide have identified procurement as an area exposed to financial negligence and unethical practices and have endeavored to include procurement into the strategic views of the government policies.

2.1.9 Public Procurement: Cost of Corruption

The direct costs of corruption include loss of public funds through misallocations or higher expenses and lower quality of goods, services and works (OECD, 2015a). A study by the OECD and the World Bank shows that corruption in the infrastructure and extractives sectors lead to misallocation of public funds and substandard and insufficient services (OECD, 2015a). Although it is difficult to measure the exact cost of corruption due to its hidden nature, it has been estimated that between 10-30% of the investment in publicly funded construction projects may be lost through mismanagement and corruption and estimates of 20-30% of project value lost through corruption are widespread (Wells, 2014). The Construction Sector Transparency Initiative (CoST) also estimates that “annual losses in global construction through mismanagement, inefficiency and corruption could reach USD 2.5 trillion by 2020”(CoST 2019).

2.2 Public Procurement: Lack of Integrity

Integrity risks occur in every stage of the procurement process, from the needs assessment over the bidding phase to the contract execution and payment. The nature of the integrity risk may differ for each step, and red flags include undue influence, conflict of interest, and various kinds of fraud risks (OECD, 2016). The detail has been presented in the Figure 1.

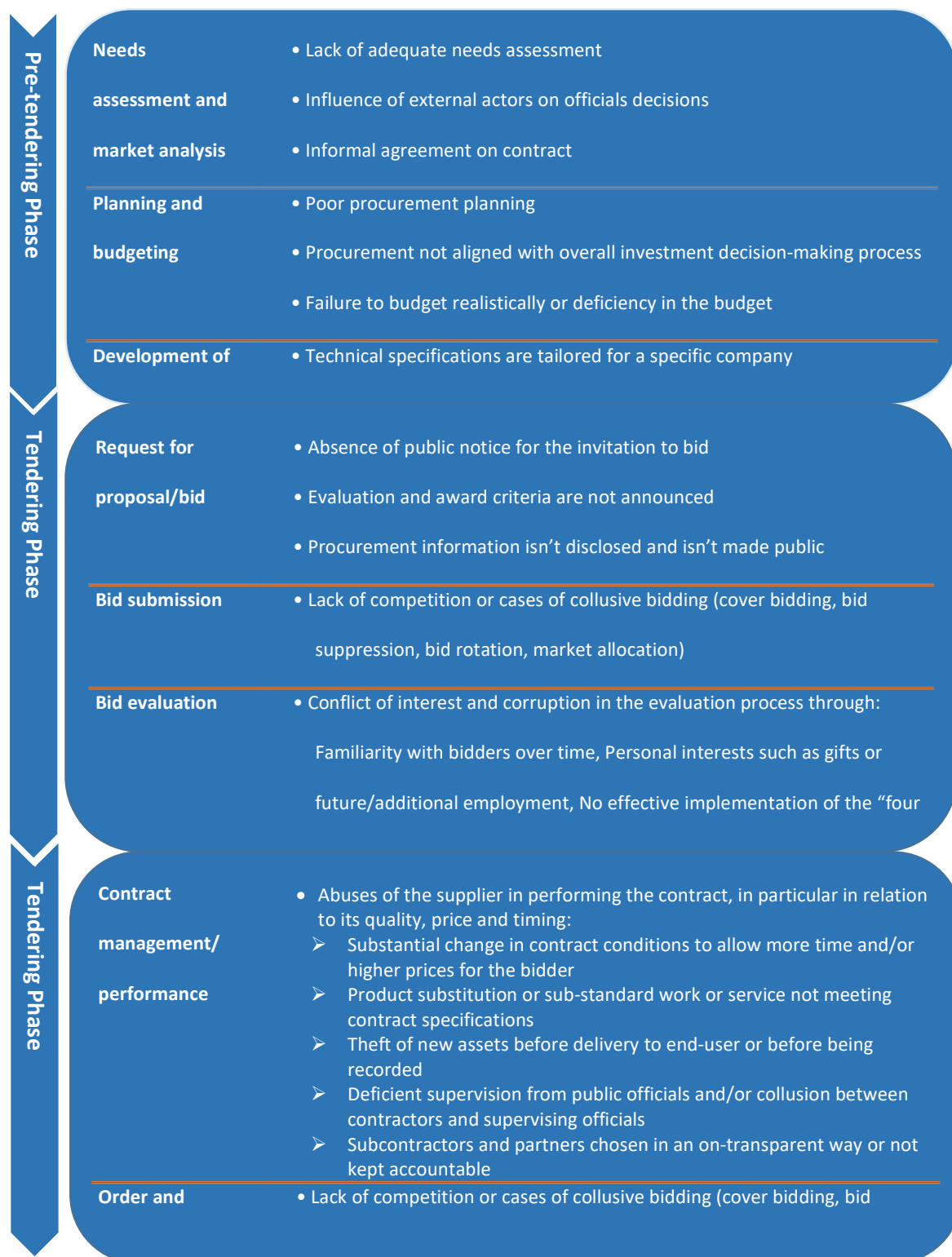


Figure 1: Integrity risks in the procurement process

2.3 Public Procurement: Categories of Risks

Risk-taking has benefits and might even be essential for success. However, it is the opposite when it comes to procurement, where the last thing any business wants is risk. No individual or business can foresee specific risks in procurement. However, public organization can and need to prepare for a volatile and uncertain future that entails tech disruption, climate change, data security issues, and threats to the global supply chain. Eventually, by understanding and managing risks, organizations can fine-tune procurement processes to address and curb them. As seen during the COVID-19 pandemic, some contemporary business approaches including, just-in-time inventory management, comes with their own risks. And policymakers worldwide continue to evolve and broaden their scope, addressing matters such as data privacy and protection alongside money laundering and sanction breaches.

2.3.1 Public Procurement: Risk Category and Management

There are different categories of risks, which are shown in the Table 1 below:

Table 1: Categories of risks

Risk Category	Description	Examples
Financial	Risk associated with financial loss.	Reputational damage leading to lost sales, negative exchange rate impact, liquidated damage payable under a contract
Strategic	Risk associated with organizational strategy	Lack of sales in the near market, lack of investment in new technology, rival growth limiting the sales

Operational	Risks that impede or affect the organization's operations	Machinery breakdown, excessive employee sickness, failed external audit
Hazard	Risks which must be actively avoided or mitigate	Lone workers in unsafe conditions, working at height, poor housekeeping

Some procurement risk may arise from wider environment, which includes social risks, technological risks, economic risks, environmental risks, political risks, legislative risks, ethical risks, and demographic risks.

2.3.2 SCM/Public Procurement: Level of Risks and It's Management

The Operational Risk Assessment Framework (ORAF, World Bank, 2011) is an integrated and nested risk framework that pulls together key risk areas that may affect the achievement of the PDO of an IL operation. Through the ORAF assessment process, teams are expected to: (i) identify and describe relevant risks to the project; (ii) rate those risks based on their relevance, and (iii) establish adequate risk management measures when required.

The four (4) different levels of risks that are considered under the framework are:

- **Stakeholder Risks:** Project teams assess risks to the Bank's relations with borrowers, donors, and other key stakeholders, who might question or even oppose the project in a manner that could affect the achievement of its development objectives. Project teams need to be aware and mitigate where possible;
- **Operating Environment Level Risks:** Includes Country Risk and Sector/multisector Risk³. These risks are related to the environment in which the project operates
- **Implementing Agency Level Risks:** Includes Capacity Risk and Governance Risk (which includes a Fraud and Corruption Risk sub-category). These risks are related to the specific Agency/ies that implement the project.
- **Project Level Risks:** Includes Design Risk, Social and Environmental Risk, Program and Donor Risk and Delivery Monitoring and Sustainability Risk. These risks are directly related to the project, where there is the most scope for mitigating and controlling risk levels through project design and implementation.
- **Other Risks:** Project teams also have the option to identify one or two additional risks that may be specific to the operation if they are not captured in the existing list.



Figure 2. Seven common types of risk in public procurement

2.3.3 Public Procurement: Types of Risks

Procurement can be challenging, especially with so many potential risks littered along the procurement processes. There are seven (7) common types of risks in public procurement, which are shown in the figure 2 (Figure Source: Frevvo, A. Deshpande, 2022).

The detail of seven common types of risks in public procurement are as follows:

1. Inaccurate internal needs analysis: When a department or business unit identifies the need for a product or service, it kicks off the procurement process. At this stage, the risks are obvious:

- Overstatement or understatement of the need
- Unrealistic timescales and schedules
- Inadequate budget
- Poorly-designed requirements

Incorrect forecasting and budgeting at the get-go may cause to make a chain of incorrect decisions down the line. For example, choosing a vendor that's too expensive or may buy far too many of one product. This may cause the unsold stock to pile up, increasing storage costs. Or may not for affording to pay a vendor for the next batch of goods. These delays frustrate today's impatient customers. This customer dissatisfaction has an outsized negative impact on the brand. One in three people will leave a favorite brand after just one bad experience.

2. Poor vendor selection: For a smooth-running operation, need a reliable and stable supply of products and services. Without dependable vendors and robust vendor management systems, procurement team spends their time remedying problems rather than fulfilling their actual roles. The risks of poor vendor selection include:

- Low-quality products
- The vendor might not deliver what they say they can
- The supplier might not deliver on time
- The vendor might not uphold the correct ethical standards
- The supplier could be non-compliant

Taking a look at the rental car company, Hertz, After hiring Accenture to deliver a highly interactive new website, Accenture failed to deliver on the promised functionalities. The site was delayed twice, resulting in huge financial impacts for Hertz. Hertz sued the multinational company for \$32 million. Selecting high-quality vendors by exploring reviews of their products and services. Looking for awards, ratings, and customer success stories that prove the quality of the supplier.

3. Disorganized vendor management: To prevent procurement mishaps due to breakdowns in vendor relationships, need to assess the following risks:

- Communications and relationship management
- Account/Order management processes
- In-house supplier processes you may have to work with
- Data management

According to a recent survey, almost 60% of companies have taken measures to strengthen the quality of their supplier relationships. For instance, streamlining your purchasing order process by digitizing and automating it, means happier vendors, accurate record-keeping, and the elimination of human error. Foster resilient vendor relationships with clear communication channels, streamlined purchasing systems, and strong feedback mechanisms.

4. Non-compliance and crude contract management processes: Depending on the business model and the vendors buying from, it may need to consider procurement legislation. While private procurement has little in the way of legislation, certain legal requirements must be met for public procurement. This is especially important for public educational institutions looking to negate procurement compliance risks.

5. Error-prone, manual internal processing: Manual processing amplifies supply chain risk factors considerably as you're far more likely to make errors when forms are hand-written. Paper copies are also likely to get lost when transferred from person to person for approval. Procurement risk factors associated with manual processing include:

- Error-ridden documentation
- Lost forms and data
- Delayed approvals
- Wasted time remedying mistakes and chasing paperwork

6. Delays in procurement: Constant mistakes in the procurement process lead to delays as the procurement team is constantly tasked with fixing problems rather than moving procurement processes along. And the sheer laborious nature of manual procurement procedures means staff spends hours inputting, updating, and searching for data and documentation. On the bright side, 54% of employees say that automation of menial tasks could save them up to 240 hours per year. With digital procurement software, it is possible to automate purchasing orders and procurement approvals, while monitoring for bottlenecks in the chain.

7. Talent shortages: To succeed in the 21st century, a business must attract and retain world-class talent. The procurement department is no exception. A recent brief from DHL Research

predicts severe talent shortages for supply chain professionals, so it needs to plan to stem this risk ahead of time. Talent shortage risks you may encounter in the procurement process include:

- High demand for certain procurement professionals
- High demand causes salaries for procurement professionals to inflate beyond your budget
- Understaffing slows down your procurement processes
- Unqualified staff make lots of mistakes
- Annoying, lengthy, complex application/interview processes scare off top candidates

Minimize talent shortage risks with strong hiring processes that streamline onboarding to make it easy to identify high-quality procurement professionals to join your team.

2.3.4 Black Swan: Myth, Reality and Bad Metaphors The term “Black Swan event” has been part of the risk management lexicon since its coinage in 2007 by Nassim Taleb in his eponymous book titled “The Black Swan: The Impact of the Highly Improbable”. Taleb uses the metaphor of the black swan to describe extreme outlier events that come as a surprise to the observer, and in hindsight, the observer rationalizes that they should have predicted it. The metaphor is based on the old European assumption that all swans are white, until black swans were discovered in 1697 in Australia.

The most common definition of a Black Swan is an event in which the probability of occurrence is low, but the impact is high. A contemporary example is a 1,000 year flood or 9/11. In these, and similar events, the impact is so extreme, risk



Figure 3. The Black Swan

managers have felt the need to classify these events separately; call them out with an asterisk (*) to tell decision makers not to be lulled into a false sense of security because the annualized risk is low. This is where the office-talk term “Black Swan” was born. It is an attempt to assign a special classification to these types of tail risks. This isn’t an entirely accurate portrayal of Black Swan events, however, according to both Taleb and Thomas.

According to Taleb, a Black Swan event has these three attributes: “**First**, it is an outlier, as it lies outside the realm of regular expectations, because nothing in the past can convincingly point to its possibility. **Second**, it carries an extreme 'impact'. **Third**, in spite of its outlier status, human nature makes us concoct explanations for its occurrence after the fact, making it explainable and predictable.”

After examining the complex scenarios in which these types of conditions exist, it’s clear that the concept Taleb is trying to describe is well beyond something that would be found in a risk register, and is, in fact a critique of modern risk management techniques. It is an oxymoron to include this term in a risk program or even use it to describe risks.

Factor Analysis of Information Risk (FAIR), the risk analysis model developed by Jack Jones, doesn’t deal directly on a philosophical level with Black Swan events, but it does provide risk managers with a few extra tools to describe circumstances around low probability, high impact events. These are called risk conditions. “Risk Conditions”: The FAIR Way to Treat a Black Swan. Risk is what matters. When scenarios are presented to management, it doesn’t add much to the story if one risk has a higher probability or a lower probability than other types of risks, or if one impact is higher than the other. FAIR provides the taxonomy to assess, analyze and report risks based on a number of factors (e.g., threat capability, control strength, frequency of a loss event). Most risk managers have just minutes with senior executives and will avoid an in-depth discussion of individual factors and will, instead, focus on risk. Why do some risk managers focus on Black Swan events then?

Risk managers use the term because they need to communicate something extra – they need an extra tool to draw attention to those few extreme tail risks that could outright end a company. There may be something that can be done to reduce the impact (e.g., diversification of company resources in preparation for an earthquake) or perhaps nothing can be done (e.g., market or economic conditions that cause company or sector failure). Nevertheless, risk managers would be remiss to not point this out.

Risk conditions go beyond simply calling out low probability, high impact events. They specifically deal with low probability, high impact events that do not have any or have weak mitigating controls. Categorizing it this way makes sense when communicating risk. Extreme tail risks with no mitigating controls may get lost in annualized risk aggregation.

2.4 FAIR Risk Conditions: Unstable and Fragile Risk.

Unstable risk conditions describe a situation in which the probability of a loss event is low and there are no mitigating controls in place. It's up to each organization to define what "low probability" means, but most firms describe events that happen every 100 years or less as low probability. An example of an unstable risk condition would be a DBA having unfettered, unmonitored access to personally identifiable information or a stack of confidential documents sitting in an unlocked room. The annualized loss exposure would probably be relatively low, but controls aren't in place to lower the loss event frequency.

A fragile risk condition is very similar to an unstable risk condition; however, the distinction is that there is one control in place to reduce the threat event frequency, but no backup control(s). An example of this would be a critical SQL database is being backed up nightly, but there're no other controls to protect against an availability event (e.g., disk mirroring, database mirroring).

2.5 Procurement Risk Management Processes: Different Perspectives

2.5.1 Procurement Risk Management: Asian Development Bank (ADB)

The procurement risk framework applies to different entity/organizational levels (country, sector/agency, and project) and to each stage of the project life cycle-a continuous process that cascades through the project and procurement cycles. The borrower (or grant recipient) and ADB are responsible for managing risk at different stages of the procurement cycle, and they need to work together to ensure that risks are identified and managed effectively. While the borrower is directly responsible for such actions, ADB has a fiduciary responsibility to ensure risks are identified and managed within country and sector strategies, and at agency and project levels. The procurement risk framework is structured around the risk management process in Figure 4 beginning with the identification of risks.

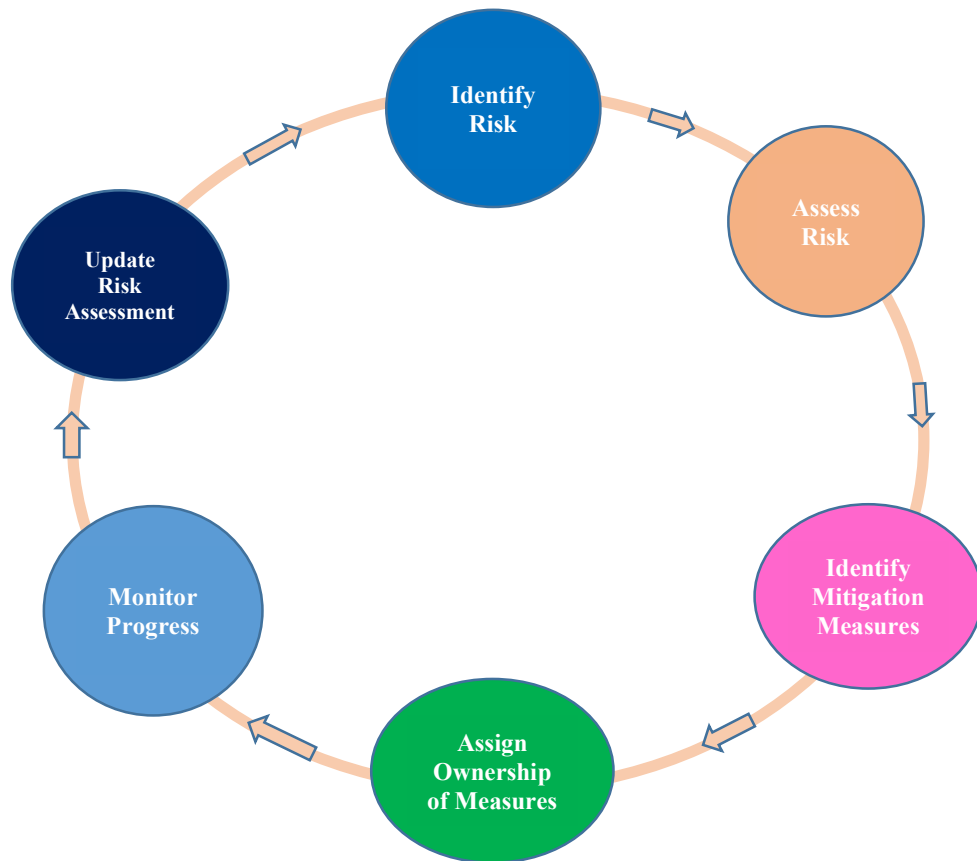


Figure 4. The procurement risk management framework of ADB

The procurement risk framework in Figure 4. shows the inputs used for the identification of risks at each stage of the procurement cycle. These inputs are used to assist in the identification of risks at each stage. Risks are then assessed in terms of likelihood and consequence. The output of the risk assessment process is the identification and implementation of measures to mitigate the risks. Implementation of the mitigation measures happens via the measures being assigned to the appropriate party to action as required. Progress on the mitigation measures is monitored on a continuous basis to ensure that they are implemented and effective. Finally, risk assessments are updated to reflect any changes to risks or any new risks.

2.5.2 Procurement Risk Management: The World Bank

Risk assessment is a dynamic process starting with preparation and continuing through implementation. This assessment will help to continuously monitor the evolution of risks; to identify the emergence of new risks; to assess progress with, and impact of the implementation of risk management measures; and, as necessary, to devise appropriate adjustments to support the achievement of the project's results. The risk assessment processes of The World Bank consist of:

- The centrality of teamwork and dialogue;
- Project assessments done during preparation feed into the project team's risk analysis and assessment;
- Views of the borrower and relevant partners;
- Country Risks are assessed by CMUs (Country Management Unit)
- Sector Management Unit (SMUs) take the lead in assessing Sector/multi-sector risks

Step 1: Identifying, Describing and Rating Risks

The step includes:

- Operations Risk Assessment Framework (ORAF) Guiding Questions: A tool to identify and describe risks relevant to the project and its Project Development Objective (PDO);
- Each risk category needs to be considered;
- Rating risks following a linear rating scale;
- Risks are rated before mitigation.

Step 2: Establishing Adequate Risk Management Measures

The step includes:

- Identifying (in consultation with the borrower and relevant partners) the key risk management measures planned to be undertaken during the (a) preparation and (b) implementation periods of the operation.
- The focus in risk management is on those risks that have the potential to derail project implementation and could affect achievement of the key results and that have real potential for mitigation.
- As a rule of thumb: (i) not all risks need to be mitigated; some may only need to be monitored if they cannot be addressed through the project; (ii) if the risk rating for a certain risk is considered low, no mitigation measure needs to be entered; a simple phrase indicating “Not relevant” will suffice; (iii) whenever possible, teams should manage risks through the project design; (iv) on average, no more than three measures per risk are expected.
- Timeframe within which key risks require mitigation.
- Managing risks through project design.

Step 3: Overall Risk and Determining the Processing Track

The step includes:

- Use judgment in doing the overall risk assessment.
- Two processing tracks. Track 1 (express lane), and Track 2 (regular lane).
- Decision on the Overall Project Risk and processing track.
- Corporate (enhanced) reviews.

Step 4: Recording the Work: Risk Assessment Template and the Project Portal

The step includes:

- ORAF and the new Portal.
- Full and Disclosed versions of ORAF. The printed version of the undisclosed “full” ORAF template has sixteen rows, of which the first twelve describe, rate and introduce risk management measures for each risk category:
 - Risk Description.
 - Risk Rating.
 - Proposed Risk Management Measures.

These measures do not affect the risk ratings as risks are rated before mitigation. These should be carefully and selectively chosen so as to have on average no more than three measures per risk category. For each measure the system will require: (i) a Responsible party (Client/Bank/Partner), (ii) the Stage during which the mitigation measure will take place (Preparation/Implementation); (iii) the Due date of the action (if applicable); and (iv) Status (Not yet due/in progress/delayed/completed/dropped). This information will help teams monitor the implementation of the mitigation measures and take corrective measures if some of them are not working or cannot be implemented.

2.5.3 Procurement Risk Management: CIPS

Supply chain risk management (SCRM) is a set of activities aimed at reducing supply chain risks. These activities often include identifying supply chain risks, assessing the probabilities and the severity of impacts, prioritizing the risk event to be dealt with and developing actions for mitigating risks or planning backup actions (Vanany et al., 2009).

Effectively, SCRM is the management of supply chain risks achieved through coordination/collaboration of supply chain partners to ensure profitability and continuity (Christopher, 2004). SCR managers need to assess the risk sources for the supply chain, identify the risk concept of the supply chain by defining the most relevant risk consequences, track the risk drivers in the supply chain strategy and mitigating risks in the supply chain (Juttner et al., 2003). Risk can be defined as ‘the probability of an unwanted outcome happening’ (CIPS: Risk Management in Purchasing and Supply Management). In addition to supply chain coordination SCRM often requires the coordination and collaboration of processes and activities across different organizational functions, such as marketing, sales, production, product design, procurement, logistics, finance and information technology (Tang, 2006). Fast adaptation facilitated by SCRM is one of the most critical supply chain functions, as unexpected developments can bring just-in-time supply chains to an abrupt halt (IBM White Paper, 2008).

Supply-chain risk sources fall into three categories: environmental (external) risk sources, network-related risk sources, and organizational (internal) risk sources (Juttner et al., 2003).

(1) External risks can be driven by events either upstream or downstream in the supply chain. They may include demand risks related to unpredictable or misunderstood customer or end customer demand, supply risks related to any disturbances to the flow of product within the supply chain, environment risks that originate from shocks outside the supply chain, business risks related to factors such as supplier financial or management stability, physical risks related

to the condition of a supplier's physical facilities. (2) Internal risks are driven by events within company control, such as manufacturing risks caused by disruptions of internal operations or processes, business risks caused by changes in key personnel, management, reporting structures, or business processes, planning and control risks caused by inadequate assessment and planning and ineffective management, mitigation and contingency risks caused by not putting contingencies in place (CIPS Australia: Risky Business; Kiser and Cantrell, 2006).

2.5.4 Procurement Risk Management: Overview of Processes

For efficient risk management in procurement of mega projects, there is need to have a rigorous appraisal (WB, 2011) of these mega projects towards a more accurate risk identification to enable procurement risk reduction strategies (Bistch, 2010). This auger well revealed with Flyvbjerg et al (2003) proposition of a departure from the convectional approach to mega project development processes, to a more current institutionalist approach centered on practices and rules that comprise accountability in project processes. The theory thus gives prominence to efficient risk identification. Further, Agency theory extends organizational thinking by pushing the ramifications of outcome uncertainty to their implications for creating risk. The implication is that outcome uncertainty coupled with differences in willingness to accept risk should influence contracts between principal and agent (Whittington, 2012 and Jensen & Meckling 1976).

In the procurement processes, ex ante risk identification allows for risks to be contracted up front and thus managed efficiently by the most able party (Shrestha et al 2013). The theory thus also gives prominence to risk allocation and monitoring. Agency theory provides lenses to explore and understand the five landscapes on which procurement risks occur: external dependencies (supply chain robustness, supplier viability); market conditions and behaviors (competitive or not; supply availability); procurement process; management controls; and the

ability and agility to handle unexpected event (Russil, 2010); and therein provides a basis on which to develop risk management strategies.

The risk mitigation/management processes consist of establishing the context, identifying the risks, analyzing the risks, evaluating the risks, treating/mitigating/managing the risk, monitoring and reviewing the risks (CIPS, L5M2, Managing Supply Chain Risk, 2019. PP 122).

2.5.5 Generic List of Procurement Risk Indicators: OECD

The Organization for Economic Co-operation and Development is an intergovernmental economic organization with 38 member countries, founded in 1961 to stimulate economic progress and world trade. The organization recommended following risk indicator in the different phases of public procurement.

Phase-1: Procurement Risk Indicators in Pre-tendering Stage

1. Needs assessment

- Commission of studies below the national regulatory threshold: Use of “friendly consultancies”, contracting an entity that belongs to the decision-maker;
- Studies that are never delivered; and
- Altering the outcome of the selection process by: asking a commission from successful tender or successful tender was forewarned about commission and builds amount in the tender

2. Planning & budgeting

- Lack of an annual procurement plan tied to long-term strategic objectives or overall investment decision-making process;
- Cost estimates are inconsistent with market rates; and

- Government does have the capacity to monitor decentralized units responsible for conducting procurement.

3. Definition of requirements

- Technical requirements not based on clear requirements or with an unnecessary number of restrictions aiming at reducing competition;
- Unjustified constraints hindering foreign participation;
- Selection and award criteria not clearly defined or disclosed in advance;
- Tender requirements prepared by a service-provider who belongs to a wider group including numerous subsidiaries or affiliated entities;
- Anonymity of suppliers/bidders and confidential information on suppliers/bidders' records is not properly guarded; and
- Licensing of unqualified companies through the provision of fraudulent quality assurance certificates.

1. Choice of procedure

- Lack of procurement strategy and criteria for the use of non-competitive tenders;
- Misuse of exception procedures on the basis of legal exceptions: contract splitting; extreme urgency or protection of national security interests; unjustified continuation of existing contracts; and
- Timeframe not consistently applied to all suppliers/bidders.

Phase-2: Procurement Risk Indicators in Tendering Stage

1. Invitation to tender

- Absence of public notice or insufficient time to receive invitations to bid;
- Invitation to bid is advertised on a restricted basis (e.g., advertisement only available in province or in limited media outlets);

- Sensitive, non-public or confidential information is disclosed;
- Public notice contains insufficient information and instructions to help suppliers/bidders prepare their bids, including pricing instructions; and
- Bids envelopes are unsealed or opened before opening session.

2. Evaluation & analysis of bids

- Limited number of bids received;
- Strong similarities between bids;
- Unreasonable delays in evaluating bids and selecting winner; and
- Vested interests are identified amongst members of the evaluation committee.

3. Contract Award

- Failure to verify the lists of firms excluded from procurement;
- Weighting factors altered during examination of proposals;
- Criteria used to select suppliers/bidders is different from public notice;
- Failure to verify certificates submitted; and
- Lack of access to records and minutes on procedure.

Phase-3: Procurement Risk Indicators in Post-award Stage

1. Contract management

- Change in contract conditions to allow more time and/or higher prices for the supplier/bidder;
- Product substitution or sub-standard work or service not meeting contract requirements;
- Penalty clauses missing from contract; and
- Lack of proper reporting and recordkeeping of changes in contract.

2. Order payment

- Lack of adequate controls of works, supplies and services provided by either internal or external audit;
- False accounting and cost misallocation between contracts;
- Late payments and invoices; and
- False or duplicate invoicing for goods and services not supplied.

2.5.6 Public Procurement Processes Cycle: Overview

Public procurement cycle refers to the chain activities, assessing the requirements, competition, and award of the contract. In some definitions, elements of inventory and logistics management are also included but they are a part of contract administration.

The primary purpose of public procurement is awarding the contracts to qualified service providers, contractors for procurement of goods and services required for government and public sector operations according to the processes listed in the public procurement rules (IMPPM, 2022).

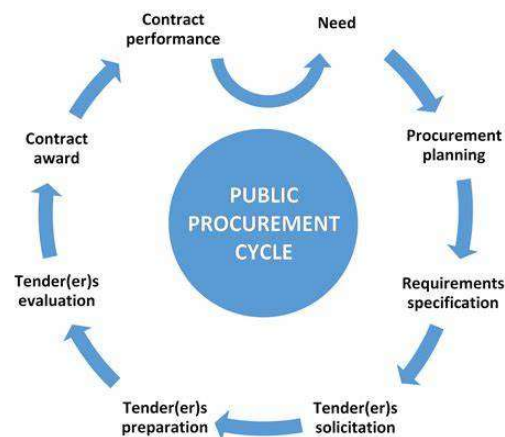


Figure 5. Public procurement cycle

The principal actors in the public procurement process are the procurement practitioners. They need to gain the stakeholder's trust, have a clear understanding of the procurement process and its principles and ensuring the goal of public procurement are achieved. The ones who would benefit from the results of public procurement are

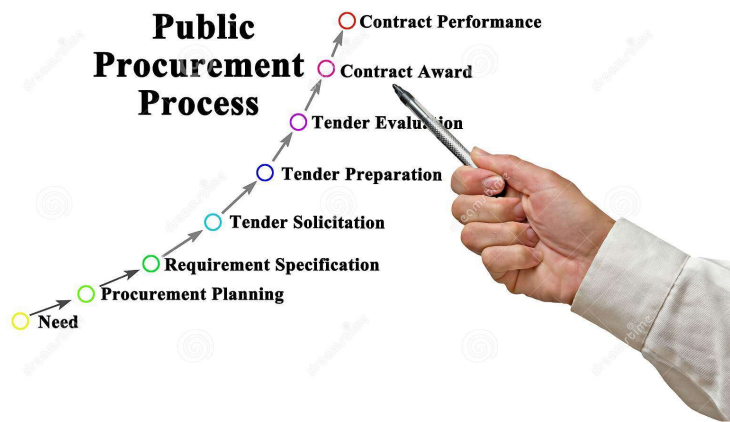


Figure 6. Public procurement process

known as stakeholders it includes those who take a keen interest in the process and even those who might be affected in any manner by a procurement action. The

primary difference between actors and stakeholders in their participation in the process. The latter playing a passive role while the former is actively involved. As actors also benefit from the use of public amenities, they are also stakeholders. All citizens of a country are beneficiaries of the public goods and services available and provided in the form of public utilities, educational systems, transportation systems, and medical services and facilities (Dreamstime.com, 2021).

Chapter 3

Risk Management Framework in DEIED Project

The process of identifying risks and their potential impact on Digital Entrepreneurship and Innovation Eco-System Development (DEIED) Project requires decisions to be made about the likelihood of risk occurring, identifying severity of that risk and deciding what risk mitigation and management procedure would be used to respond to any risk event occurring. The following steps were adopted for risk management in DEIED Project.



Figure 7. Risk management framework in DEIED project

3.1 Establishment of the Context

The Digital Entrepreneurship and Innovation Eco-System Development (DEIED) Project is the fourth component of Private Investment and Digital Entrepreneurship (PRIDE) Project of the World Bank. The other 3 components are being implemented by Bangladesh Economic Zone Authority (BEZA) of Prime Minister Office (PMO). The DEIED part (4th component) is being implemented by Bangladesh Hi-Tech Park Authority (BHTPA) for enhancing global and domestic business development in Information Technology (IT) and Information Technology Enabling Services (ITES) through adopting Public-Private-Partnership (PPP) model. There are large number of new types of procurement in consulting services, works and non-consulting services. For example, the Consulting Services for “Managing University Innovation Hub”, “Startup and Scaleup Program Management”, “Transaction Advisory Services & Private Operator”, “Program Content Production Services,” “Design and Supervision Firm” are high value contract, new and complex in nature with lots of procurement risks. On the other hand, large works contract like “Construction of Vision 2021 Tower-2 inclusion of “Green Building Concept” considering the “Environmental and Social Framework (ESF)” of The World Bank with associated risk of hiring the appropriate design and supervision firm, appropriate construction contractor and completion of the construction of such a high-rise modern green building within the stipulated timeframe ensuring the quality of construction.

On the other hand, most of the procurements are International Competitive Bidding (ICB) with higher risk of Joint Venture Partners participations, their presence in Bangladesh due to Covid-19/Omicron Pandemic, inclusion of “Force Majeure” Clauses in the contract and implementation of such a risky issue during contract implementation and management stage.

Considering the above situation, The World Bank rated the project as one of the “High Risk” Projects in respect to procurement. And that’s why an attempt has been undertaken to manage the associated risks in the procurement processes through developing a “Risk Management Framework” for mitigating the risks and finally reducing the risks in an acceptable level.

3.2 Assessment of the Risks: At the Different Stages of Procurement Cycle

The procurement risks in DEIED Project were identified through Focus Group Discussion (FGD), internal meeting, meeting with the stakeholder, vendors and suppliers, constrictors, through environmental analysis (STEEPLED), SWOT analysis and personal interview. The assessed procurement risks in different phases of procurement and stages of procurement cycle are as follows:

3.2.1 Pre-Tendering Phase

3.2.1.1 Need Assessment Stage

Risk of most of the large procurement packages are assessed and listed in the whole procurement plan of the Development Project Proposal (DPP) during project preparation. To achieve the targeted goal of the project new procurement needs have been arising during the project implementation period, which have been included in the procurement plan duly approved by the World Bank and Head of the Procuring Entity (HOPE). There is a provision of a procurement package in the whole procurement plan of DPP “Need Based Consultancy”, a vulnerable procurement package needs to be taken care. **The assessed procurement risks in this stage of procurement cycle are:**

- Need assessment based on insufficient knowledge of the present market;
- Need based on the personal preference of the senior management of project and or Bangladesh Hi-Tech Park Authority (BHTPA);

- A “Force Need” through political pressure;
- Provoking or unjustified needs for purchasing of goods and services;
- Personal unjustified need of the influential project personnel;
- Excessive or underestimated pricing of the required goods/service/works.

3.2.1.2 Procurement Planning Stage

Procurement planning is done yearly basis and based on the whole procurement plan of the DPP. The yearly procurement plan is finalized following a planning meeting with the project personnel and representative from the BHTPA. Usually, the yearly planning is chaired by the Director (Technical). The yearly procurement plan is finalized in this meeting with a provision of updating quarterly basis through approval of the HOPE. **The assessed procurement risks in this stage of procurement cycle are:**

- Inclusion of unjustified and less important procurement packages through faulty or inadequate assessment;
- Breaking down of the large packages into small lots without proper justification;
- Selecting unappropriated procurement method;
- Inclusion of excessive number of procurement packages, which may beyond the capacity of the procurement staff of the project.

3.2.1.3 Requirements Specification Stage

The technical standard and specification are prepared in this stage based on the analyzed and finalized needs of the project. There are mainly two principles preparation of technical specifications: conformance and performance. Conformance specification focuses on meeting the expectations of compliance with various laws and following acceptable and defensible standards. Performance specification, on the other hand, provides expectations about the achievement of corporate objectives. It is associated with strategic activities and seeks to maximize the benefits flowing to shareholders. While the former focuses on accountability and responsibility to demonstrate due diligence under the law, the latter has a leadership role linked to the execution of business activities and, therefore, has more of a business orientation. **The assessed procurement risks in this stage of procurement cycle are:**

- Inclusion of unjustified (not required) items/works/services in the procurement plan;
- Narrow definition of commercial specification;
- Biased specification in an intention to reduce the number of tenders;
- Inadequate requirement of with variety of offer, which may not meet the needs of the project;
- Mentioning the specific “Brand” and “Country of Origin” for purchasing pre-choosing goods;
- Specification matching with specific supplier/consultant/contractor to fulfill the unwise commitment.

3.2.2 Tendering Phase

3.2.2.1 Tender Document Preparation Stage Including Draft Contract

A tender solicitation can be used to solicit tender through public advertisement on national newspapers (at least two, one Bangla and one English), in BHTPA website, CPTU website

(if estimated tender value is equal to or more than BDT. 1 crore for goods, works and non-consulting services and BDT. 50 lacs for services, through direct invitation of selected suppliers by means of a source list were permitted for pre-qualification, or by invitation of one source only if conditions for a non-competitive process have been met. **The identified procurement risks in this stage of procurement cycle are:**

- Inclusion of unacceptable terms and conditions in the advertisement (in IFT or in REOI);
- Providing inadequate information to enhance specific tenderer or confusing the wider tenderer community to inhibit in participation of the tender;
- Confusing invitation for tender/REOI by inconsistent requirements;
- Missing of publication of IFT/REOI in all the required media.

3.2.2.2 Tender Submission Stage

Tender documentation is the document set issued for Invitations for Tender (IFT), Request for Expression of Interest (REOI), Request for Bid (RFB), Request for Quotation (RFQ) etc. The tender document must be written clearly and include properly defined mature technical documentation and/or specification. The tender documentation must comply with PPA 2006 and PPR 2008 (for post review packages), and The World Bank Procurement Regulation, Fourth Edition, November 2020 (for prior review packages). Tender documentation must clearly state the planned activities at each stage of the tender process. **The identified procurement risks in this stage of procurement cycle are:**

- Exclusion of pre-bid/pre-proposal meeting/conference;
- Failure of adequately answering the clarification questions/making answers available to all tenderers;
- Incomplete tender document or complexity in tender document;

- Favoritism in answering clarification questions;
- Breach of confidentiality;
- Low response from suppliers, errors and mistakes in submitted tenders;

3.2.2.3 Tender Evaluation Stage

The evaluation of tenders is the stage in the procurement process identifies which one of the tenders meets the set requirements. They also view the most suitable on the basis of the pre-announced award criteria. This is either the evaluated lowest-priced or the most economically advantageous tender. **The identified procurement risks in this stage of procurement cycle are:**

- Poor value for money due to limited competition;
- Failure by Tender Evaluation Committee (TEC) to follow effective evaluation procedures;
- Breaches of security by any member of Tender Evaluation Committee;
- Subjective evaluation, but not objective evaluation of tenders;
- Evaluation of tender not reflecting “Best Value for Money”;
- Evaluation criteria or sub-criteria are not clear or identifiable to tenderers leading to retendering;
- Selecting an inappropriate supplier/consultant having no capacity to execute contract;
- Selecting an inappropriate supplier/consult by the political influence or by the forcing of BHTPA authority led to unsuccessful contract completion.

3.2.2.4 Contract Award Stage

Once TEC recommended a preferred tenderer, and after the approval of the BHTPA/World Bank the contract award stage is where a contract spelling out the terms and conditions of the Procuring Entity (PE) and Supplier relationship is drafted and once both parties have an agreement on contract performance KPIs, supply dynamics, logistics, invoicing, and contract management terms, the contract is signed and work on the items agreed upon commences. This is where a contract is officially awarded to a contractor. Most of the responsibility in this phase lies with the PE (Project Director) and Supplier/Consultant. It is important that the PE and Supplier/Consultant understand all of the components of a contract award so that it can continue to work toward a realistic schedule. **The identified procurement risks in this stage of procurement cycle are:**

- Unwillingness of the supplier/contractor to accept the contract;
- Performance security not provided in due time or not agreed to provide performance security;
- Not agreed with terms and conditions of the contract, especially the terms and condition of the World Bank set forth in the General Condition of the Contract (GCC), Particular Condition of the Contract (PCC) leading to failure of signing the contract;
- Notifying the contract award (as per PPR 2008) or signing contract (as per The World Bank Rule) within the original tender/proposal validity period;
- Failure in negotiation due to lack of negotiation skill of the procurement personnel;
- Undue delay in the approval of the contract by the contract approving authority.

3.2.3 Post Tendering Phase

3.2.3.1 Contract Performance/Management Stage

Contract management is the process of managing contract, creation, execution, and analysis to maximize operational and financial performance at an organization, all while reducing financial risk. Organizations encounter an ever-increasing amount of pressure to reduce costs and improve its performance. The basics of contract management are: (i) Contract management is when someone takes on the responsibility of managing contracts for employees or vendors/supplier or other parties; (ii) Contract managers need legal knowledge to accurately lead the contract management process; (iii) Should have a contract manager. **The identified procurement risks in this stage of procurement cycle are:**

- Lack of contract manager in the project or no given responsibility to anyone for contract management;
- Delays in delivery as per contract;
- Delivery of unsatisfactory products/materials/services;
- Unauthorized increase by PE in scope of work (additional costs), i.e., issuing variation order;
- Loss or damage to goods/materials etc.;
- Fraud/bribery or any other breach of contract by any of the parties;
- Incorrect or invoice and incurrent payment;
- Delay in payment and no provision of penalty for delay payment;
- No imposition of liquidated damage due to completion of supply after the intended completion date.
- “Variation Order” of tender with time extension having no limit or unexpected price variation.

3.3 Risk Analysis

The identified risks were analyzed using “**Probability versus Impact Matrix**”. In this technique, two factors are important based on which the risk rating was done. Probability (often called likelihood) refers to the chance of risk becoming an event, and impact is the effect or scale of an event if it happens. Probability (Frequency of occurrence) and Impact (degree of severity) were both divided on a four-point scale. Probability is classified as follows: Very High (5), High (4), Medium (3), Low (2) and Very Low (1) (i.e., on 5 to 1 point scale). Similarly, Impact was classified as follows: Very High (5), High (4), Medium (3), Low (2) and Very Low (1) (i.e., on 5 to 1 point scale). The detail of analysis is shown in figure 8.

Probability	Very	Very Low/ Very High	Low/ Very High	Medium/ Very High	High/ Very High	Very High
	High	Very Low/ High	Low/High	Medium/ High	High	Very High/ High
	Medium	Very Low/ Medium	Low/ Medium	Medium	High/ Medium	Very High/ Medium
	Low	Very Low/ Low	Low	Medium/ Low	High/Low	Very High/ Low
	Very	Very Low	Low/ Very Low	Medium/ Very Low	High/ very Low	Very Low/ Very Low
		Very Low	Low	Medium	High	Very High
		Impact				

Figure 8. Risk analysis using Probability versus Impact Matrix

3.4 Evaluation of the Risks

Risk evaluation is the process of determining the probability and impact of potential risks in the procurement processes. DEIEDP will continually evaluate the risks that could have a detrimental effect on the procurement processes and work diligently to implement strategies that could help to circumvent or mitigate any negative outcomes caused by the inherent risks. Typical procurement risks that are prone to evaluation could be assessing the potential impact

of a technical malfunction or determining the financial impact that would be caused by rising interest rates on borrowed capital. At each stage of procurement cycle, all the risks have been evaluated, prioritized, and ratted as 1st, 2nd, 3rd, 4th and 5th with specific responsibilities. The detail procurement risks evaluation with risk rating, treating the risk and monitoring of risk of Digital Entrepreneurship and Innovation Eco-System Project has presented in the Appendix 1.

3.5 Risk Treatment/Management: DEIED Project

Risk management in procurement is about ensuring the risks associated with the purchase of goods, works or services are identified, assessed, managed and monitored to ensure unexpected or undesirable outcomes are minimized whilst achieving the objectives of the procurement, and identifying opportunities to improve performance. The risk management cycle adopted in DEIED Project are presented in the Figure 9.

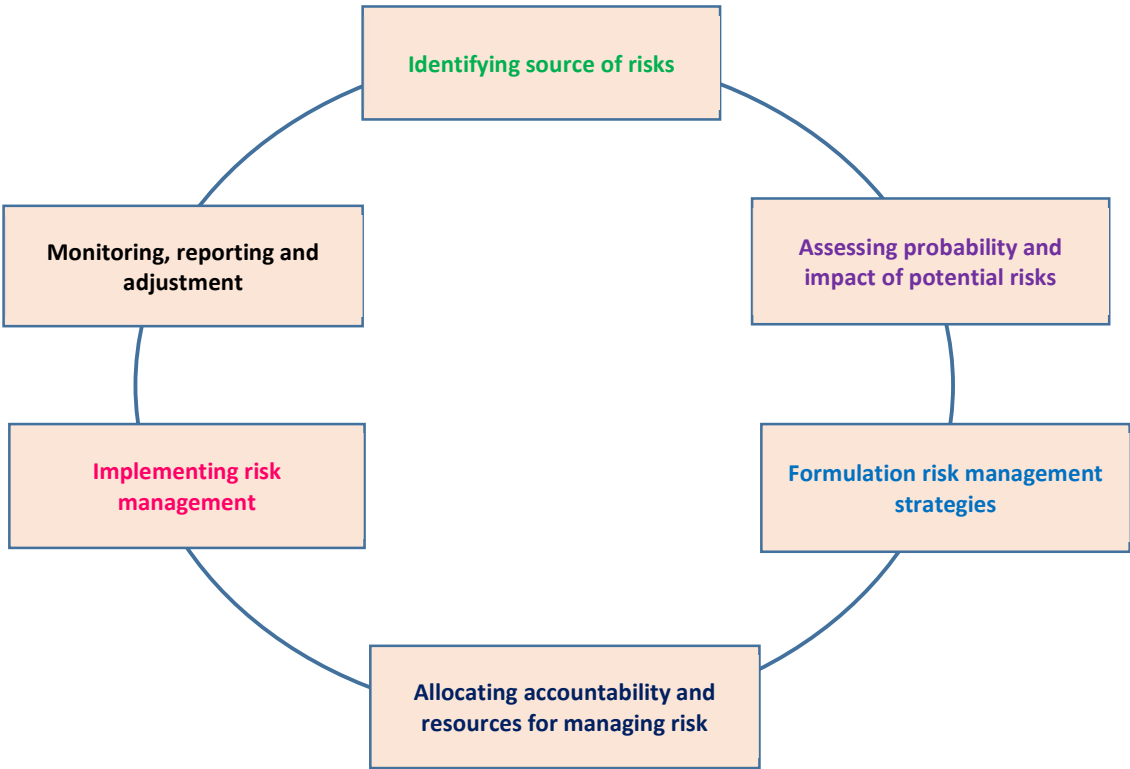


Figure 9. DEIEDP risk management cycle

The following risk management strategies were recommended for adopting to reduce procurement risks of the project:

1. **Accepting (Tolerating):** Risks with negligible assessed likelihood or impact (or there is no viable way to reduce the risk), no further action may, for the moment, be required, or justified or positive risk, e.g., positive or innovative offer by the supplier.
2. **Mitigating (Treating):** Taking active steps to manage the risk in such a way as to reduce or minimise its likelihood or potential impact, or both.
3. **Transferring:** Taking out insurance cover, or not putting all supply eggs in one basket or using contract terms to ensure that the costs of risk events will be borne by (or shared with) supplier.
4. **Avoiding (Terminating):** The risk associated with a particular package or decision is too great, and cannot be reduced, the DEIEDP will consider not investing or engaging in the activity or opportunity.
5. **Enhancing:** A risk response that attempts to enhance the conditions to ensure that a positive risk event will likely happen.
6. **Exploiting:** A risk response that takes advantage of the positive risks within DEIED project.
7. **Escalating:** Escalation is appropriate when the project team or the project sponsor agrees that a threat is outside the scope of the project (**like black swan**) or that the proposed response would exceed the project director's authority and that would be escalated.
8. **Application of Controls:** Different types of control measures will be undertaken depending on the category, probability and impact of the risks. Some of the control measures those would be undertaken are as follows:

- Preventative controls have designed to limit the possibility of a negative outcome being realized;
- Directive controls have designed to ensure that a desired outcome is achieved;
- Detective controls designed to identify when an undesired risk event (black swan) has occurred and
- Corrective controls designed to mitigate the effect of undesirable outcomes once they have occurred

The detail procurement risks evaluation with risk rating, treating the risk and monitoring of risk of Digital Entrepreneurship and Innovation Eco-System Project has presented in the Appendix 1.

3.6 Setup of Monitoring and Review Provision

3.6.1 Development of a Risk Management Committee (RMC)

Consideration of risk management policy of BHTPA in respect of issues and activities that are project-wide, or above a nominated threshold of risk severity, BHTPA has agreed to form a risk monitoring and review committee (Appendix 2). The committee will be reviewing and agreeing the process of managing risk in BHTPA, including proposition of risk awareness training for concern staff. The committee will communicate emerging strategic and operational risks to the BHTPA, and lower-level risks to line managers in relevant functions. The committee will also review and update the risk register and maintain an overview of total risk to the BHTPA at any given time. The committee will work as champion in risk management, and ensuring the sharing of best practice, across the BHTPA and Projects.

3.6.2 Created Risk Culture in BHTPA and its Projects

Engagement of senior management (managing director, director and project directors), leaders and influences in consistent expression and modelling of the new values. Changing underlying values and beliefs, through communication, education and involvement of employees in discussing the need for new ideas and behaviors for managing the risks. Embedding desired attitudes and behaviors in policies, procedures, rules, systems, employee communications, management style and so on would be strengthen through using human resource management mechanisms to reinforce the changes.

3.6.3 Involve Suppliers in Risk Management and Monitoring

Suppliers may be involved in various way with the project procurement cycle for mitigating risks, some of which are as follows:

- **Total Involvement:** Encouraging risk awareness at all points of contact with the procurement network of DEIED Project including BHTPA;
- **Cross-functional Collaboration:** Developing an integrated, process-focused approach to risk identification and management across the internal and external supply chain of BHTPA;
- **Supplier Collaboration and Contribution:**
 - Gathering information from suppliers about risk factors in the supply market;
 - Gathering feedback from suppliers about risk factors arising from the buyer's systems and processes;
 - Collaboration to minimise risk through negotiated agreements, specifications and contract terms;
 - Early supplier involvement in new product and service development;

- Securing, motivating and rewarding the willingness of suppliers to share the risk;
- Developing information flows across the supply chain;
- Securing, motivating and managing supplier compliance and diligence.

Chapter 4

Risk Management Plan in DEIEDP

4.1 Development of Procurement Risk Management Strategies

In line with the World Bank risk management strategy and DEIED Project's implementation strategy to fix, optimize and implement the core procurement activities, we have assessed and reaffirmed our risk management framework and planning that discussed in the chapter 3.

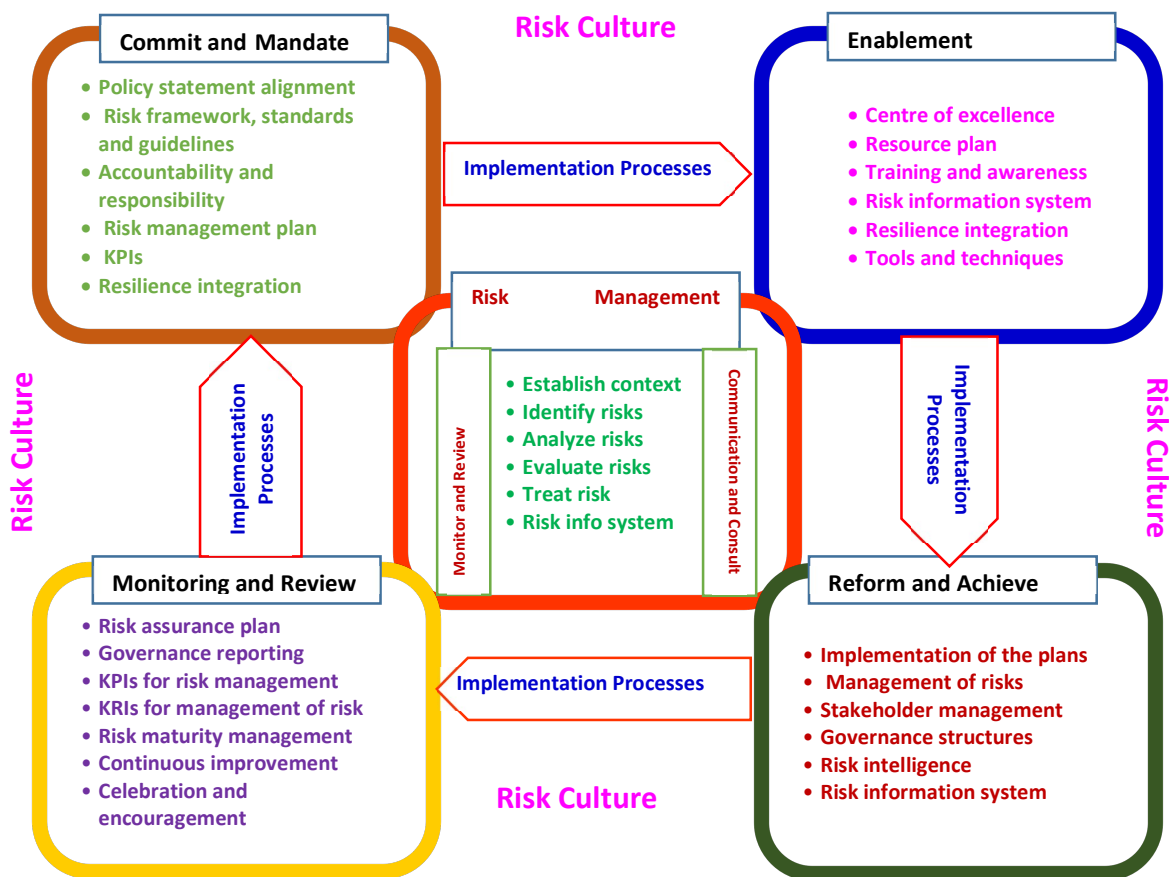


Figure 10: Risk Management Strategies in DEIEDP

This is to ensure that all the activities risk management framework remain ‘fit for purpose’ in an increasingly volatile macroeconomic and operational context, which is exacerbated by the cascading impacts of Covid-19 from last two years. Our assessment identified the need for more vigilant risk governance, and a more active risk management culture which responds appropriately to organizational dynamics. The assessment also determined that the need to reset the risk management base must take effect at a much faster pace, which would require the BHTPA and DEIED Project to be resilient and proactive rather than reactive in responding to present and emerging risks. To this end, DEIED Project has crafted and embarked on a journey to complete all the procurement activities. Procurement of most of packages are moving in the right direction to enhance our risk management framework and risk management maturity level. Progress made on our journey will be monitored and reported to the various risk governance structures in the BHTPA and Projects and to our stakeholders. The new risk management framework drives the required principles, concepts and common language through five key components (as outlined in Figure 10.). The figure shows two cycles. The innermost cycle is at the core of the risk management process and is an iterative tactical process for managing risks on a day-to-day basis in the project. Surrounding the tactical process is the strategic envelope ensuring commitment and mandate for risk management from the Risk Management Committee and the BHTPA. The framework, which remains premised on the best practices, aligns with the DEIED Project’s risk management process with its strategy and operational objectives, stakeholder needs, desired risk culture, organizational structure, combined assurance process and governance principles. Overall, the framework is designed to enable agility in decisions around risk identification, prioritization and control, and to ensure risk-related initiatives and tasks are clearly defined, owned and maintained within acceptable levels in the DEIED Project.

4.2 Development of a Risk Register

A risk register is a document used as a risk management tool and to fulfill regulatory compliance acting as a repository for all risks identified and includes additional information about each risk, e.g., nature of the risk, reference and owner, mitigation measures. It can be displayed as a scatterplot or as a table. The risk register developed for the DEIED project has presented in the Appendix 3.

The DEIED Project has assessed some procurement related risks. Some of the assessed procurement related risk are bid rigging by the bidders, pressure of political people to the change the evaluation results of a consultancy service, political pressure for undue expectation in bid evaluation process, undue favoritism for a specific consulting firm by one of the members of Proposal Evaluation Committee. The assessed risks has been included in the risk register and necessary management/mitigation measures have been undertaken, which have been reflected in risk register.

4.3 Preparation of Project's Operation (Business) Continuity Plan

A contingency plan is a plan devised for an outcome other than in the usual (expected) plan. It is often used for risk management for an exceptional risk that, though unlikely, would have catastrophic consequences. A contingency plan is a strategy that outlines the steps of actions for the teams will take in the event of a crisis occurring. It is essentially the backup plan that goes into action when the worst-case scenario occurs. The goal of contingency plan is to help the project stay up and running after an issue arises. The contingency plan for efficient management of unexpected risks (black swan) has presented in Appendix 4.

Project's Operation (Business) Continuity Plan (BCP) covers how the project will continue its operational activities in the event of a critical event. For example, during Covid-19 pandemic the project office was fully closed, most of the project personnel were infected by Covid-19, work from home was assigned as under the Business Continuity Plan of the project. Usually, such types of unexpected events are rare.

4.4 Preparation of Disaster Recovery Plan

There are four types of business impact, which are loss of facility, disruption in project operation, technology disruption, and organizational issues may be happened. Disaster recovery planning considers the business impact in terms of the length of the time that a disaster will interrupt the continuity of the project operations, actions to respond to that interruption and a determination of recovery window. Business continuity and disaster recovery plan usually includes awareness, prevention, remediation, and knowledge management.

On the other hand, the Disaster Recovery Plan will contain more detail in the form of a step-by step plan regarding how each function should look to recover its operation. A Business Continuity Plan and a Disaster Recovery Plan for the DEIED Project has presented in Appendix 5.

Chapter 5

Way Forward

The desired control effectiveness is decided by risk sponsors/owners, assuming that all additional mitigation has become effective at some planned future date. The level of desired control effectiveness is based on considerations such as the extent to which the root causes, consequences or likelihood of the risk materializing can be controlled. Due consideration is also given to the cost benefit analysis when deciding on the scope for further control and risk treatment. The risk sponsors/owners consider closing the gap (if any) between the actual control effectiveness and the desired control effectiveness when deciding on risk response strategies. The top five residual risk clusters may be therefore tolerated for being outside the generic tolerance levels. This is largely due to the influence of external factors materializing as the root causes within these clusters. The internal risk assurance process and methodology provide the ‘checks and balances’ within BHTPA governance and risk frameworks by identifying the gaps between the ideal risk state versus the risk in real terms. The integrated risk assurance activities happen across three types of risks: Risk type Assurance objectives, Preventable risks, and Provide assurance on the management of risks, as well as the associated processes, controls and compliance, which are:

- **Strategic risks:** Providing assurance on decision governance processes and the execution of approved plans to actualize intended benefits;
- **Extraneous risks:** Providing assurance on the resilience of business processes and market intelligence processes.

The risk management committee will monitor the risk through developing a risk register, listing risk, allocation the person to management the risk. The committee will arrange meeting quarterly basis with senior management of the BHTPA including project staff and submit their risk monitoring progress, challenges and way forward.

Hope, the integrated control assurance process of BHTPA will provide a clearly defined, documented approach for integrating and aligning procurement risk assurance processes and control systems to facilitate appropriate risk and governance oversight. It can be assured that the project structure has ultimate management control of the risk management environment through the continued oversight of risk management committee.

REFERENCES

- [1] ADB. (2018). Procurement Risk Framework, Guide Note on Procurement, Asian Development Bank.
- [2] ADB. (2018). Procurement Risk Framework, Guide Note on Procurement, Asian Development Bank, Mandaluyong, Philippines.
- [3] AFP. (2014). Construction firms ‘colluded’ over SA World Cup stadiums. DispatchLive. [Online] Available from: <http://www.dispatchlive.co.za/gen/construction-firms-colluded-over-sa-world-cup-stadiums/> (Accessed 2 March 2016).
- [4] Albert A. (2011). Study Reveals Common Causes of Corruption in South Africa [Online] Available from: www.cips.org/en/SupplyManagement/News/2011/April/ (Accessed 20 February 2016). allencheng.com · firstthings.com · realinvestmentadvice.com Wikipedia text under CC-BY-SA license.
- [5] Ambe and Badenhorst-Weiss (2012). Grounded theory analysis of municipal supply chain management. Afr. J. Bus. Manag. 5(29):11562-11571. (Coetzee, 2015).
- [6] Ambe IM, Badenhorst-Weiss JA. (2012a). An exploration of public sector supply chains with specific reference to the South African situation. J. Pub. Admin. 46(3):1100-1115.
- [7] Ambe, I. & Badenhorst-Weiss, J. (2012). Procurement challenges in the South African Public Sector. Journal of Transport and Supply Chain Management [Online] Available from: <http://jtscm.co.za/index.php/jtscm/article/view/63> (Accessed 20 February 2016).
- [9] Armed Forces Philippines. (2014). Manual of Procedures for the Procurement of Goods and Services. Camp General Emilio Aguinaldo Quezon City, 1110, *Philippines*.
- Auditor General South Africa. (2015). General report on the provincial audit outcomes of GAUTENG. [Online] Available

from:<http://www.agsa.co.za/Portals/0/PFMA/201415/web%20GAUTENG%20pfma%202015%20.pdf> (Accessed 23 February 2016).

[10] Baciú, I. (2013a). The Possibility to Reserve a Public Contract under the New European Public Procurement Legal Framework, *European Procurement & Public Private Partnership Law Review*, Volume 13 (2018), Issue 4, Pages 307 – 325.

[11] Baciú, I. (2013b). Fraud Against the Financial Interests of the European Union, Particularly in the Field of Public Procurement. [Online] Available from: <http://0-web.b.ebscohost.com.ujlink.uj.ac.za/ehost/pdfviewer/pdfviewer?sid=0f3e1383-624c-4be2-9014-bf90c1c2062b%40sessionmgr198&vid=13&hid=101> (Accessed 24 February 2016).

Bitsch, F., Buchner, A., & Kaserer, C. (2010). Risk, return and cash flow characteristics of infrastructure fund investments. *EIB Papers*, 15(1), 106-136.

[12] Business Anti-Corruption. n.d. [Online] South Africa. (2016). Available from: <http://www.business-anticorruption.com/country-profiles/south-africa> (Accessed 29 February 2016).

[13] Christopher, M. (2004). Using Public Procurement to Achieve Social Outcomes. *Natural Resources Forum* 28 (2004) 257–267.

[14] CIPS. (2013). Risky Business: An Introduction to Procurement Risk Management:[Online]Available from: https://www.cips.org/Documents/Knowledge/Procurement-Topicsand-Skills/3-Risk-Mitigation/Risk-Analysis-andManagement/Risky_Business_an_introduction_to_procurement_risk_management_-CIS_Australasia.pdf (Accessed 20 February 2016).

[15] CIPS. (2019). L5M2, Core Book. Managing Supply Chain Risk, Chartered Institute of Procurement and Supply Management, United Kingdom. PP 122.

- [16] CIPS. (2020). CIPS Risk Tools Guidance Notes, Jarvis Grove. Chartered Institute of Procurement and Supply Management, United Kingdom.
- [17] CoST. (2012). Press Release, accessed online on 8 June 2016 at <http://www.constructiontransparency.org/documentdownload.axd?documentresourceid=8>
- [18] Department of National Treasury. (2015). Public Sector Supply Chain Management Review 2015. Department of National Treasury, Republic of South Korea, 40 Church Square, Pretoria, 0002 Private Bag X115, Pretoria, 0001.
- [19] Deshpande A. (2022). Frevvo, 500 East Main Street Suite 330 Branford, CT 06405 United States.
- [20] Erridge, A., Greer, J. (2002). Partnerships and public procurement: building social capital through supply relations. *Public Administration*, 80(3): 503-522. [Online] Available from: <http://onlinelibrary.wiley.com/doi/10.1111/1467-9299.00315/abstract> (Accessed 24 February 2016).
- [21] European Commission. (2014a). Report from the Commission to the Council and the European Parliament - EU Anti-Corruption Report, accessed online on 8 June 2016 at http://ec.europa.eu/dgs/home-affairs/e-library/documents/policies/organized-crime-and-humantrafficking/corruption/docs/acr_2014_en.pdf.
- [22] European Commission. (2014b). EU Budget 2014 Financial Report, accessed on line on 8th June at http://ec.europa.eu/budget/financialreport/2014/foreword/index_en.html.
- [23] Flyvbjerg, B. (2014). What You Should Know about Megaprojects and Why: An Overview. *Project Management Journal*, 45(2), 6-19, DOI: 10.1002/pmj.21409

- [24] Flyvbjerg, B., Bruzelius, N., & Rothengatter, W. (2003). *Megaprojects and risk: an anatomy of ambition*. Cambridge, UK: University Press.
- [25] Hutchison D. & Pretorius C. (2014). *The Law of Contract in South Africa*. OUP Southern Africa, 2013 M01 17 - 512 pages.
- [26] IBM White Paper. (2008). James C. Spohrer. *A Handbook of Service Science*, Published in March 2010, 10.1007/978-1-4419-1628-0 30, pp.677-706.
- [27] IMPPM. (2022). *International Master's in Public Procurement*, University of Rome Tor Vergate, Via Colombia-2, Rome, Italy.
- [28] *International Business Attitudes to Corruption Survey*. (2014). (Conducted in 2014-2015). Regional Anti-Corruption Initiative, Fra Andjela Zvizdovica 1, B/7, 71000 Sarajevo, Bosnia and Herzegovina.
- [29] Jensen, M.C. & Meckling, W.H. (1976). *Theory of the Firms: Managerial Behavior, Agency Costs and Ownership Structure*. *Journal of Financial Economics*, 3, 305-360.[http://dx.doi.org/10.1016/0304-405X\(76\)90026-X](http://dx.doi.org/10.1016/0304-405X(76)90026-X).
- [30] Juttner, U., Peck, H. & Christopher, M. (2003). *Supply Chain Risk Management: Outlining an Agenda for Future Research*, *International Journal of Logistics Research and Applications*, Volume 6, 2003, Issue-4: Logistics Research Network Conference (LRN2002), pp197-210, Published online:12 May 2010.
- [31] Kanyane, H., Houston, F & Sausi, K. (2013). *State of South African Public Service in the Context of Macro Socio Economic Environment*. *Journal of Public Administration and Governance*, 3(1): 126-139. [Online] Available from:<http://www.macrothink.org/journal/index.php/jpag/article/view/3267> (Accessed 28 February 2016).

- [32] Kapdi, N. & Sulaiman, S. (2015). Fronting Practices [Online]. Available from: <http://www.jdsupra.com/legalnews/fronting-practices-76327/> (Accessed 5 March 2016)
- [33] Kiser, J. & Cantrell, G. (2006). Six Steps to Managing Risk. Supply Chain Management Review, 1 April 2006.
- [34] Lei. X, Donghong. Z & Tie. W. (2009). Determination of procurement risk coefficient based on principal components analysis. International Conference on Transport Engineering. [Online] Available from: [http://ascelibrary.org/doi/abs/10.1061/41039\(345\)513](http://ascelibrary.org/doi/abs/10.1061/41039(345)513) (Accessed 24 February 2016).
- [35] Mofokeng. M. (2012). Improving the Effectiveness of Public Entities Procurement Practices (Master's Dissertation). Johannesburg: University of Johannesburg. [Online] Available from: <http://ujdigispace.uj.ac.za/bitstream/handle/10210/8491/Mofokeng%20c%20M%202013%20Masters.pdf?sequence=1&isAllowed=y> (Accessed 16 February 2016).
- [36] Nassim T. (2007). The Black Swan: The Impact of the Highly Improbable. Publisher, Random House (USA), April 17, 2007, 978-1400063512 (USA), Q375.T35 2007.
- [37] Neupane et. al. (2012). Perceived Benefits Related to Anti-Corruption from e-Tendering System in Nepal, Asian Journal of Information Technology, 11, 1, 22-29. Ware, Moss, Campos and Noone (2011:81).
- [38] Neupane, A., Soar, J. and Vaidya, K. (2012). Perceived Benefits Related to Anti-Corruption from e-Tendering System in Nepal, Asian Journal of Information Technology, 11, 1, 22-29. Ware, Moss, Campos and Noone (2011:81), /pdfviewer?sid=0f3e1383-624c-4be2-9014-bf90c1c2062b%40sessionmgr198&vid=13&hid=101 (Accessed 24 February 2016).

- [39] Neupane, A., Soar, J., Vaidya, H & Jianming Yong. (2012). ROLE OF PUBLIC E-PROCUREMENT TECHNOLOGY TO REDUCE CORRUPTION IN GOVERNMENT PROCUREMENT. International Public Procurement Conference. [Online] Available from: http://eprints.usq.edu.au/21914/1/Neupane_Soar_Vaidya_Yong_PV.pdf (Accessed 23 February 2016).
- [40] News24. (2016, February 11). Full speech: State of The Nation Address 2016. [Online] Available from: <http://www.news24.com/SouthAfrica/News/full-speech-state-of-the-nation-address-2016-20160211> (Accessed 17 February 2016).
- [41] Ntayi. J. M, Ngoboka. P & Kakooza C.S. (2012). Moral Schemas and Corruption in Ugandan Public Procurement. *Journal of Business Ethics*: 112- 417. [Online] Available from: <http://link.springer.com/article/10.1007%2Fs10551-012-1269-7/fulltext.html> (Accessed 11 February 2016).
- [42] OECD, Annual Report. (2009). The Organization for Economic Co-operation and Development, OECD. 2, rue André Pascal. 75775 Paris Cedex 16. France.
- [43] OECD, Annual Report. (2012). The Organization for Economic Co-operation and Development, OECD. 2, rue André Pascal. 75775 Paris Cedex 16. France.
- [44] OECD, Annual Report. (2013). The Organization for Economic Co-operation and Development, OECD. 2, rue André Pascal. 75775 Paris Cedex 16. France.
- [45] OECD, Annual Report. (2016). The Organization for Economic Co-operation and Development, OECD. 2, rue André Pascal. 75775 Paris Cedex 16. France.
- [46] OECD. (2007). Integrity in Public Procurement: Good Practice from A to Z, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264027510-en>.

- [47] OECD. (2012). OECD Integrity Review of Brazil: Managing Risks for a Cleaner Public Service, OECD Public Governance Reviews, OECD Publishing, <http://dx.doi.org/10.1787/9789264119321-en>.
- [48] OECD. (2013a). Implementing the OECD Principles for Integrity in Public Procurement: Progress since 2008, OECD Public Governance Reviews, OECD Publishing, <http://dx.doi.org/10.1787/9789264201385-en>.
- [49] OECD. (2013b). Public Procurement Review of the Mexican Institute of Social Security: Enhancing Efficiency and Integrity for Better Health Care, OECD Public Governance Reviews, OECD Publishing, <http://dx.doi.org/10.1787/9789264197480-en>.
- [50] OECD. (2014). OECD Foreign Bribery Report: An Analysis of the Crime of Bribery of Foreign Public Officials, OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264226616-en>.
- [51] OECD. (2015a). Consequences of Corruption at the Sector Level and Implications for Economic Growth and Development. OECD Publishing, Paris, <http://dx.doi.org/10.1787/9789264230781-en>.
- [52] OECD. (2015b). OECD Recommendation of the Council on Public Procurement, accessed online on June 8th at <http://www.oecd.org/gov/public-procurement/recommendation/OECDRecommendation-on-Public-Procurement.pdf>.
- [53] Quintal. (2016). Public Procurement in India: Assessment of Institutional Mechanism, Challenges, and Reforms No. 204 31-July-2017.
- [54] Russill, R. (2010). A Short Guide to Procurement Risk. Published on May 7, 2010, by Routledge, ISBN 9780566092183, 142 pages.

- [55] Shresthal, A., ChanT. K., Chan, Aibinu, A., & Chen, C. (2013). Risk Transfer in Public Private Parternships; lessons from the water waste treatment sector. *Journal of Sustainable Development Law and Policy*, 2(1), 206-221.
- [56] Skenjana. N. (2014). Exploring the Pattern of Expenditure in Government Departments. Afesis-corplan. [Online]. Available from: <http://afesis.org.za/local-governance/local-governance-articles/186-exploring-the-pattern-ofexpenditure-in-government-departments.html> (Accessed 5 March 2016).
- [57] Soar and Jianming. (2012). Role of Public e-procurement Technology to Reduce Corruption in Government Procurement. 2012 International Public Procurement Conference, August 17-19, Seattle, Washington.
- [58] Soomo, M., Zhang, X. (2015). Roles of private-sector partners in transportation: public-private partnership failures. *Journal of Management in Engineering*. [Online] Available from: [http://ascelibrary.org/doi/abs/10.1061/\(ASCE\)ME.1943-5479.0000263](http://ascelibrary.org/doi/abs/10.1061/(ASCE)ME.1943-5479.0000263) (Accessed 24 February 2016).
- [59] South Africa. National Treasury. (2003). Policy strategy to guide uniformity in procurement reform processes in government. [Online] Available from: <http://www.treasury.gov.za/legislation/pfma/supplychain/Policy%20to%20Guide%20Unifor%20mity%20in%20Pro%20curement%20Reform%20Processes%20in%20Government.pdf> (Accessed 24 February 2016).
- [60] South Africa. National Treasury. 2004. Supply Chain: A guide for accounting officers/ authorities. [Online] Available from: <http://www.treasury.gov.za/divisions/ocpo/sc/Guidelines/SCM%20Jan900- Guidelines.pdf> (Accessed 24 February 2016).

[61] Stansbury, N. (2005). Exposing the Foundations of Corruption in Construction. In Transparency International (Ed.) Global Corruption Report 2005, accessed on 3 April 2016 at: http://archive.transparency.org/misc/migrate/publications/gcr/gcr_2005.

[62] Supply Chain Management Review Update. (2016). [Online] Available from: <http://www.treasury.gov.za/publications/other/SCM%20Review%20Update%202016.pdf> (Accessed 11 November 2016).

[63] Supply Chain Management Review. (2015). [Online] Available from: <http://www.treasury.gov.za/publications/other/SCMR%20REPORT%202015.pdf> (Accessed 28 February 2016).

[64] Tang, P. (2006). Determining Reasonable Bid Ratios Under Two-sided Power Distribution Assumption for Public Procurement Under Capped Lowest-Cost Bidding System. International Journal of Procurement Management, Vol.12, No.2, (online published) April, 2009, pp 174-198.

[65] Tarun Patel et.al. (2016). "Comparison analysis of parameters affecting material Procurement in construction industry by RII and IMPI methods" IJSDR Volume 1, Issue 5, May 2016.

[66] The Global Green Growth Forum. (2012). 9-10 October 2012. Copenhagen, Denmark.

The Institute of Internal Auditors South Africa. (2015). Corporate Governance Index 2015 [Online] Available from: http://c.ymcdn.com/sites/www.iiasa.org.za/resource/collection/1FD175F0-82CB-40AF-9127-7A91E5C1058C/2015_Corp_Gov_Index.pdf (Accessed 11 May 2016).

[67] The Organization of Economic Co-operation and Development. (2012). Recommendation of the Council on Fighting Bid Rigging in Public Procurement. Organization for Economic

Cooperation and Development, Belgium. [Online] Available from: <http://www.oecd.org/competition/cartels/42594486.pdf> (Accessed 17 February 2016).

[68] The South African Crime Quarterly. (2022). Institute for Security Studies (an accredited journal published jointly by the ISS and the Centre of Criminology at the University of Cape Town), South Africa.

[69] Transparency International. (2016). Corruption Perceptions Index 2015. [Online] Available from <https://www.transparency.org/cpi2015/> (Accessed 11 May 2016), International Secretariat, Alt-Moabit, 9610559, Berlin, Germany.

[70] Vanany, I., Zailani, S. & Pujawan, N. (2009). Supply Chain Risk Management: Literature Review and Future Research. Nyoman Pujawan, Sepuluh Nopember Institute of Technology (ITS), Indonesia.

[71] Wells, J. (2014). Corruption and Collusion in Construction: A view from the industry. In T. Søreide and A. Williams (Eds.) Corruption, Grabbing and Development: Real World Challenges. Cheltenham, UK and Northampton, MA, USA: Edward Elgar Publishing.

[72] World Bank. (2011). Guidance notes on the Operational Risk Assessment Framework, Risks to Achieve Results, Operations Policy and Country Services, July 1, 2011.

Appendix

Appendix A. Risk Evaluation, Rating, Treating and Monitoring Framework of DEIED Project

Identified Risk in different stages of procurement cycle	Probability (P)	Impact (I)	Severity (P x I)	Rating (Rank)	Consequences	Risk Management	Responsibility
Need Assessment Stage							
Need identification based on insufficient knowledge of the present market	High (4)	High (4)	High (16)	64% (2 nd)	Failure of tender or retendering or unappropriated supplier selection led to non-quality supply	Training to the procurement staff, motivation and awareness, enhancing knowledge in market assessment	Project Director
Need based on the personal preference of the senior management of project and or Bangladesh Hi-Tech Park Authority (BHTPA)	Low (2)	Very High (5)	Low (10)	40% (3 rd)	Personal vendor selection, issue of bribery and fraudulent practice	Training on integrity, referring to World Bank procurement regulation and refence of misprocurement issue.	Project Director
A “Force Need” through political pressure	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Black Swan, lower quality vendor selection and properly contract completion is in question	Black Swan or uncertain type of risk. When arise, referring to World Bank Procurement Regulation and transparency including issue of misprocurement	Project Director
Provoking or unjustified needs for purchasing of goods and services	Low (2)	Very High (5)	Low (10)	40% (3 rd)	Excessive resource utilization, inventory increases and unused materials	Checking and monitoring for actual needs by the risk monitoring committee (RMC).	RMC
Personal unjustified need of the influential project personnel	Low (2)	Very High (5)	Low (10)	40% (3 rd)	Excessive resource utilization, inventory increases and unused materials	Checking and monitoring for actual needs by the risk monitoring committee (RMC)	RMC
Excessive or underestimated pricing of the required goods/service/works	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Low quality supply, project objective not fulfilled	Checking and monitoring for actual needs by the risk monitoring committee RMC)	RMC
Procurement Planning Stage							

Identified Risk in different stages of procurement cycle	Probability (P)	Impact (I)	Severity (P x I)	Rating (Rank)	Consequences	Risk Management	Responsibility
Inclusion of unjustified and less important procurement packages	Medium (3)	High (4)	Medium (12)	48% (3 rd)	Goods remain unused, misuse of resources, personal gain through fraudulent practices	Risk monitoring committee may check the packages and recommend for justified packages	RMC
Inclusion of unjustified (not required) items/works/services in the procurement plan	Medium (3)	High (4)	Medium (12)	48% (3 rd)	Usually done by price estimated committee for personal gain or item for personal use.	Risk monitoring committee may check the packages and recommend for justified packages	RMC
Breaking down of the large packages into small lots without proper justification	High (4)	Very High (5)	High (20)	80% (2 nd)	Financial corruption, for personal interest.	Risk monitoring committee may check the packages and recommend for justified packages	RMC
Selecting unappropriated procurement method	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Causes no participation of tenderers or less tenderer or inappropriate tenderers	Procurement team should check the package and if required replace by appropriate procurement method	Procurement team
Inclusion of excessive number of procurement packages, which may exceed the capacity of the procurement staff of the project	Very High (5)	Very High (5)	Very High	100% (1 st)	Causes error in evaluation, non-perfect evaluation and enhancing retendering	Prioritizing the requirement, selecting the appropriate number of tenders for a FY based on the capacity of procurement team	Project Director
Requirements Specification Stage							

Identified Risk in different stages of procurement cycle	Probability (P)	Impact (I)	Severity (P x I)	Rating (Rank)	Consequences	Risk Management	Responsibility
Narrow definition of commercial specification	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Low quality purchase, economical loss, not ensure values for money	Risk Monitoring Committee and Market Price Estimate Committee (PEC) may check and verify and finalize the specification	RMC & PEC
Biased specification in an intention to reduce the number of tenders	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Low quality purchase, economical loss, not ensure values for money, personal interest	Risk Monitoring Committee and Market Price Estimate Committee (PEC) may check and verify and finalize the specification	RMC & PEC
Inadequate requirement of with variety of offer, which may not meet the needs of the project	Low (2)	Low (2)	Low (4)	20% (2 nd)	Inventory increase, project goal not fulfilled, personal gain	Risk Monitoring Committee and Market Price Estimate Committee (PEC) may check and verify and finalize the specification	RMC & PEC
Mentioning the specific “Brand” and “Country of Origin” for purchasing pre-choosing goods	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Specific tenderer may attend, no competition, question of reputation and transparency, personal gain	Risk Monitoring Committee and Market Price Estimate Committee (PEC) may check and verify and finalize the specification	RMC & PEC
Specification matching with specific supplier/consultant/contractor to fulfill the unwise commitment	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Specific tenderer may attend, no competition, question of reputation and transparency, personal gain	Risk Monitoring Committee and Market Price Estimate Committee (PEC) may check and verify and finalize the specification	RMC & PEC
Tender Solicitation Stage							
Inclusion of unacceptable terms and conditions in the advertisement (in IFT or in REOI)	High (4)	Very High (5)	High (20)	80% (2 nd)	Low number of bidder attend, low quality bidder and low-quality supply	Procurement team may check the market, based on the market information IFT/REOI need to prepare and published	Procurement Team
Providing inadequate information to enhance specific tenderer or confusing the wider tenderer	High (4)	Very High (5)	High (20)	80% (2 nd)	Low number participated tenderers, limit competition, reputation of BHTPA will be in question	Procurement team may check the qualification criteria and other requirement matching with the market	Procurement Team

Identified Risk in different stages of procurement cycle	Probability (P)	Impact (I)	Severity (P x I)	Rating (Rank)	Consequences	Risk Management	Responsibility
community to inhibit in participation of the tender							
Confusing invitation for tender/REOI by inconsistent requirements	Medium (3)	Very High (5)	Medium (15)	60% (2 nd)	Low number participated tenderers, limit competition, reputation of BHTPA will be in question	Procurement team may check the qualification criteria and other requirement matching with the market	Procurement Team
Missing of publication of IFT/REOI in all the required media	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Very limited number of tenderers participation, personal gain. Fraudulent practice	Procurement team may check the qualification criteria and other requirement matching with the market	Procurement Team
Tender Preparation Stage							
Exclusion of pre-bid/pre-proposal meeting/conference	Very High (5)	Medium (3)	Medium (15)	60% (3 rd)	Not clear award criteria, incorrect tender submission, huge unrelated bidders, problem in evaluation	Procurement team may enhance to incorporate pre-bid meeting in each tender document, if missing incorporation through corrigendum	Procurement Team
Failure of adequately answering the clarification questions/making answers available to all tenderers	Very High (5)	Medium (3)	Medium (15)	60% (3 rd)	Not clear award criteria, incorrect tender submission, huge unrelated bidders, problem in evaluation	Procurement team may enhance to incorporate pre-bid meeting in each tender document, if missing incorporation through corrigendum	Procurement Team
Incomplete tender document or complexity in tender document	Very High (5)	High (4)	High (20)	80% (2 nd)	Not clear award criteria, incorrect tender submission, huge unrelated bidders, problem in evaluation	Procurement team may enhance to incorporate pre-bid meeting in each tender document, if missing incorporation through corrigendum	Procurement Team
Favoritism in answering clarification questions	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Specific tenderer participated, reputation damage, personal gain, fraudulent practice	Risk Monitoring Committee may monitor during clarification of tender.	RMC
Breach of confidentiality	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Specific tenderer participated, reputation damage, personal gain, fraudulent practice	Risk Monitoring Committee may monitor during clarification of tender.	RMC

Identified Risk in different stages of procurement cycle	Probability (P)	Impact (I)	Severity (P x I)	Rating (Rank)	Consequences	Risk Management	Responsibility
Errors and mistakes in tender's documents	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Low response from suppliers, Poor value for money due to limited competition	Risk Monitoring Committee may monitor during clarification of tender.	RMC
Tender Evaluation Stage							
Failure by Tender Evaluation Committee (TEC) to follow effective evaluation procedures	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Inappropriate selection, low quality supply, late supply, payment before completion of works	Procurement team may influence the TEC/PEC for evaluating the tender based on evaluation criteria, Project Director may also influence the committee for transparent evaluation	Procurement Team and Project Director
Breaches of security by any member of Tender Evaluation Committee	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Inappropriate selection, low quality supply, late supply, payment before completion of works	Procurement team may influence the TEC/PEC for evaluating the tender based on evaluation criteria, Project Director may also influence the committee for transparent evaluation	Procurement Team and Project Director
Subjective evaluation, but not objective evaluation of tenders	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Inappropriate selection, low quality supply, late supply, payment before completion of works	Procurement team may influence the TEC/PEC for evaluating the tender based on evaluation criteria, Project Director may also influence the committee for transparent evaluation	Procurement Team and Project Director
Evaluation of tender not reflecting "Best Value for Money"	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Inappropriate selection, low quality supply, late supply, payment before completion of works	Procurement team may influence the TEC/PEC for evaluating the tender based on evaluation criteria, Project Director may also influence the committee for transparent evaluation	Procurement Team and Project Director
Evaluation criteria or sub-criteria are not clear or	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Inappropriate selection, low quality supply, late supply,	Procurement team may influence the TEC/PEC for evaluating the tender based on evaluation criteria,	Procurement Team and

Identified Risk in different stages of procurement cycle	Probability (P)	Impact (I)	Severity (P x I)	Rating (Rank)	Consequences	Risk Management	Responsibility
identifiable to tenderers leading to retendering					payment before completion of works	Project Director may also influence the committee for transparent evaluation	Project Director
Selecting an inappropriate supplier/consultant having no capacity to execute contract	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Inappropriate selection, low quality supply, late supply, payment before completion of works	Procurement team may influence the TEC/PEC for evaluating the tender based on evaluation criteria, Project Director may also influence the committee for transparent evaluation	Procurement Team and Project Director
Selecting an inappropriate supplier/consult by the political influence or by the forcing of BHTPA authority led to unsuccessful contract completion	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Inappropriate selection, low quality supply, late supply, payment before completion of works	Procurement team may influence the TEC/PEC for evaluating the tender based on evaluation criteria, Project Director may also influence the committee for transparent evaluation	Procurement Team and Project Director
Contract Award Stage							
Unwillingness of the supplier/contractor to accept the contract	Low (2)	Very High (5)	Low (10)	40% (3 rd)	Retender or selection of next tenderer with high price	Managing supplier relationship	Project Director/ Procurement Team
Performance security not provided in due time or not agreed to provide performance security	Very Low (2)	Very High (5)	Low (10)	40% (3 rd)	Retender or selection of next tenderer with high price	Managing supplier relationship	Project Director/ Procurement Team
Not agreed with terms and conditions of the contract, especially the terms and condition of the World Bank set forth in the General	Medium (3)	Very High (5)	High (15)	60% (2 nd)	Retender or selection of next tenderer with high price	Managing supplier relationship	Project Director/ Procurement Team

Identified Risk in different stages of procurement cycle	Probability (P)	Impact (I)	Severity (P x I)	Rating (Rank)	Consequences	Risk Management	Responsibility
Condition of the Contract (GCC), Particular Condition of the Contract (PCC) leading to failure of signing the contract							
Notifying the contract award (as per PPR 2008) or signing contract (as per The World Bank Rule) within the original tender/proposal validity period	Medium (3)	Very High (5)	High (15)	60% (2 nd)	Extension of validity period from all tenderers, hazard and time consuming	Tender evaluation should be within the tender validity period without failure except unavoidable circumstances	TEC/Project Director
Failure in negation due to lack of negation skill of the procurement personnel	Low (2)	Very High (5)	Low (10)	40% (3 rd)	Retender or selection of next tenderer with high price	Training to the procurement team in negotiation processes	Project Director
Undue delay in the approval of the contract by the contract approving authority	High (4)	Very High (5)	High (20)	80% (1 st)	Expiry of tender validity period, Retender, reputational damage	Influencing the authority to complete the evaluation within 7 days of submission	Project Director
Contract Performance/Management Stage							
Lack of contract manager in the project or no given responsibility to anyone for contract management	Very High (5)	Very High (5)	Very High (25)	100% (1 st)	Inefficient contract management and lack of contract management person	Appointing a contract manager	Project Director
Delays in delivery as per contract	Medium (3)	Medium (3)	Medium (9)	36% (4 th)	Delay delivery hampered project need and project implementation delays	The contract manager will monitor and maintain a good relationship the supplier	Contract Manger
Delivery of unsatisfactory products/materials/services	Medium (3)	Medium (3)	Medium (9)	26% (6 th)	Non-quality unexpected product may lead to unsatisfactory project outcome	The contract manager will monitor and maintain a good relationship the supplier	Contract Manger
Unauthorized increase by PE in scope of work (additional	High (4)	High (4)	High (16)	64% (2 nd)	Additional unexpected fund disbursement	The contract manager will monitor and maintain a good relationship the supplier	Contract Manger

Identified Risk in different stages of procurement cycle	Probability (P)	Impact (I)	Severity (P x I)	Rating (Rank)	Consequences	Risk Management	Responsibility
costs), i.e., issuing variation order							
Loss or damage to goods/materials etc.	Low (2)	High (4)	Low (8)	32% (5 th)	Damage of project wealth	The contract manager will monitor and maintain a good relationship the supplier	Contract Manger
Fraud/bribery or any other breach of contract by any of the parties	Medium (3)	Very High (5)	High (15)	60% (3 rd)	Fraudulent practice and loss of money and reputation	Training to the procurement team and project team regarding transparency	Project Director
Incorrect or invoice and incurrent payment	Medium (3)	Very High (5)	High (15)	60% (3 rd)	More unauthorized payment	Training to the finance team regarding transparency	Project Director
Delay in payment and no provision of penalty for delay payment	Low (2)	Low (2)	Low (4)	16% (7 th)	Damage the relationship with supplier	Training to the finance team regarding procurement issues	Project Director
No imposition of liquidated damage due to completion of supply after the intended completion date.	Medium (3)	Medium (3)	Medium (9)	36% (4 th)	Question of audit and no punishment to the supplier	Training to the finance team regarding procurement issues	Project Director

Appendix B. Risk Management Committee of DEIED Project

বাংলাদেশ হাই-টেক পার্ক অথোরিটি
আইসিটি ডিভিশন
আইসিটি টাউয়ার, আগার গাঁ, শেরেবাংলা নগর, ঢাকা-১২০৭।

নং-৫৬.০২.০০০০.০২৮.০৭.০৪৩.২১.২৩

০৯/০১/২০২২

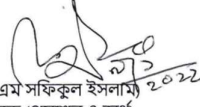
বিষয়: বাংলাদেশ হাই-টেক পার্ক অথোরিটি এর আওতাভুক্ত ডিজিটাল উদ্যোক্তা এবং উদ্ভাবন ইকোসিস্টেম উন্নয়ন প্রকল্প এর জন্য Risk Management Committee গঠন।

উপর্যুক্ত বিষয়ের পরিপ্রেক্ষিতে বাংলাদেশ হাই-টেক পার্ক অথোরিটি এর আওতাভুক্ত ডিজিটাল উদ্যোক্তা এবং উদ্ভাবন ইকোসিস্টেম উন্নয়ন প্রকল্প এর জন্য নিম্নবর্ণিত সদস্যদের নিয়ে Procurement Risk Management Committee গঠন করা হলো:

ক্র. নং	পদবী ও ঠিকানা	কমিটিতে অবস্থান
০১।	উপ পরিচালক (পরিকল্পনা) বাংলাদেশ হাই-টেক পার্ক অথোরিটি	সভাপতি
০২।	প্রকিউরমেন্ট স্পেশালিস্ট ডিজিটাল উদ্যোক্তা এবং উদ্ভাবন ইকোসিস্টেম উন্নয়ন প্রকল্প	সদস্য
০৩।	সহকারী পরিচালক (প্রকিউরমেন্ট) বাংলাদেশ হাই-টেক পার্ক অথোরিটি	সদস্য-সচিব

কমিটির কার্যপরিধি:

- ১। কমিটি প্রকল্পের ক্রয় সংক্রান্ত সকল প্রকার Procurement Risk Monitor করবে;
- ২। Risk গুলো চিহ্নিতকরণ, অগ্রাধিকারকরণ ও Risk Register এ লিপিবদ্ধ করবে;
- ৩। Risk গুলো সকলের সাথে আলোচনার মাধ্যমে ব্যবস্থাপনার সুপারিশ করবে;
- ৪। Risk গুলো ব্যবস্থাপনার জন্য সংশ্লিষ্ট কর্মকর্তাকে দায়িত্ব প্রদান করবে;
- ৫। Risk ব্যবস্থাপনার অগ্রগতি উদ্ধোতন কর্তৃপক্ষকে অবহিত করবে;
- ৬। Business Continuity and Disaster Recovery Plan বাস্তবায়নের দায়িত্ব বহন করবে।


(এ এন এম সাফিকুল ইসলাম)
পরিচালক (প্রশাসন ও অর্থ)

অনুলিপি:

- ১। উপ পরিচালক (পরিকল্পনা), বাংলাদেশ হাই-টেক পার্ক অথোরিটি, আইসিটি টাউয়ার, আইসিটি টাউয়ার, আগার গাঁ, শেরেবাংলা নগর, ঢাকা-১২০৭।
- ২। প্রকিউরমেন্ট স্পেশালিস্ট, ডিজিটাল উদ্যোক্তা এবং উদ্ভাবন ইকোসিস্টেম উন্নয়ন প্রকল্প, আইসিটি টাউয়ার, আগার গাঁ, শেরেবাংলা নগর, ঢাকা-১২০৭।
- ৩। সহকারী পরিচালক (প্রকিউরমেন্ট), বাংলাদেশ হাই-টেক পার্ক অথোরিটি, আইসিটি টাউয়ার, আগার গাঁ, শেরেবাংলা নগর, ঢাকা-১২০৭।

Appendix C. Risk Register for DEIED Project

Risk Register: Digital Entrepreneurship and Innovation Eco-System Development Project											
Risk ID	Combined Risk Score (Impact x Likelihood)	Date Raised	Raised by	Review by and date	Description of the Risk	Cause	Risk Owner	Current Status	Likelihood	Impact	Mitigation Measure
R-1	5 x 5= 25 (100%)	02/02/2022	Procurement Specialist	Risk Management Committee	Bid rigging in a RFQ for supplying office furniture	Signature by same person in all quotations	PD, DEIEDP	Mitigated	Very High	Very High	All the quotation rejected, and the bidder is debarred
R-2	5 x 3 = 15 (60%)	15/01/2022	PD, DEIEDP	Risk Management Committee	Political pressure to change the scores of winner bidder	The favored bidder was in the 2 nd position	PD, DEIEDP	Mitigated	Medium	Very High	Discussed of State Minister and he managed the pressure
R-3	5 x 3 =15 (60%)	17/09/2021	PD, DEIEDP	Risk Management Committee	Favored by a member of PEC for a specific individual consultant recruitment	Changing the CV of a specific candidate	PD, DEIEDP	Mitigated	Medium	Very High	When identified the issue all EOI were kept locked and key and evaluation was done together with all PEC members
R-4											
R-5											

Appendix D. Project's Operation (Business) Continuity Plan for DEIED Project

Sl. No.	Section	Description
01	Purpose and scope of the plan	During any pandemic or unexpected risk (black swan) the project will continue its operation without disruption or with limited disruption of the operational activities. This plan includes preparedness of DEIED project with business continuity strategy, the role of procurement team and management, the methodologies used, and who have the responsibility to maintain and update the plan.
02	Plan activation and Notification	The plan will be activated through online messaging system. It will include all staff of the project including the procurement department of BHTPA. The activity will be led by Director (Admin and Finance) of BHTPA. Side by side the message will also be monitored by the procurement team, so that everyone has receipt the message in case of any pandemic or black swan.
03	Scenarios: Assumptions and guidelines	Mostly the risk has 100% severity will be under consideration as per Appendix 1. The Risk Monitoring team will be activated immediately after the risk is arisen. The team in collaboration with the procurement team will start to assessing and analyzing the risks. The team will prioritize the risk as per operational plan of DEIED project. The project director will also be in the leading position and guiding the RMC and the procurement team in assessing, analyzing and prioritizing the risks.
04	Preparation of Scenario Plan	After prioritization of the risk, a scenario plan will be prepared, which will include: • The detection and assessment of risk event; • People responsible for response and recovery; • Continuity plan response and recovery procedure; It is noted that if the information activation system fails to work, the team will try to use or adopt all alternative to reach the activation procedure and immediately inform all concerned about the system failure with a request to use alternative procedure. If even fail is continued, the team will try to reactivate the system within 3 working days.
05	Plan Maintenance	The Deputy Director (Planning) and Deputy Project Director will be responsible for maintaining the business continuity plan. He will also review the plan, update it, if necessary, control the emergency call tree and audit trail.
06	Plan Testing	The Risk Monitoring Committee will ensure to test the plan annually. The committee will evaluate the test and learning will incorporated into the updated Business Continuity Plan.

Appendix E. Disaster Recovery Plan for DEIED Project

A disaster recovery plan is a plan which seeks to restore project critical support system such as recovery due to sudden fire, pandemic or disruption of information communication technology, system related to the organization meeting financial obligations and those managing the project's emergency actions. The disaster recovery plan of the DEIED project is included with the followings:

Sl. No.	Phases of Plan	Activities
01	Prior to a disaster	The project will: • Review the business continuity plan with key project staff • Identify the emergency activities • Insurance policy for all staff • Maintenance of the inventory for emergency purpose • Develop emergency communication plan.
02	During Disaster	The project will: • Prioritize the prevention of life • Preserve all procurement documents in safety place • Uploading the procurement document online clouds • Continuity of business continuity plan • Retain employee contract, supplier contract and contract of senior authority of BHTPA • Evacuate the employee
03	After the disaster	The project will: • Restoring the procurement activities as soon as possible • Prioritizing the emergency activities and start with those • Notify the important staff related to procurement to reinstate their work.