Report On

Transformation of procurement process through ERP and e-GP System in power plants

By

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

BRAC Institute of Governance and Development (BIGD)

BRAC University

March 2023

Declaration

It is hereby declared that

1. The internship report submitted is my 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 have acknowledged all main sources of help.

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Letter of Transmittal

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Subject: Submission of PSM-665: Supply Chain Management in Practice-Report/Practicum.

Dear Sir ,

I want to take the opportunity to submit my internship report regarding, "Transformation of procurement process through ERP and e-GPsystem in power plants," to BIGD, BRAC University in order to fulfill requirements of my MPSM course PSM-665.

I've made an effort to wrap up the report in the clearest, most comprehensive way possible with the most important details and ideas. I believe that this report will best meet the academic requirements.

Sincerely yours,

_____

Gazi Hasan Arefin

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BRAC Institute of Governance & Development (BIGD)

BRAC University

March 28, 2023

Non-Disclosure Agreement

This agreement has been established and entered into by the Electricity Generation Company of Bangladesh Ltd, EGCB, the First Party, and the undersigned student at the BRAC Institute of Governance and Development, BRAC University, the Second Party. The Master of Procurement and Supply Management requirements include a report on "**Transformation of procurement process through ERP and e-GPsystem in power plants**." which the First Party has given the Second Party permission to create. The Second Party will have the chance to interact closely with the representatives of the organization and gain access to official information and statistics. The Second Party will create a report based on their professional experience, statistics, and information they have gathered. The second party will use any and all data and material for academic reasons, while safeguarding the interests of the First Party by not making it public.

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The MPSM program offered by BIGD, BRAC University, has provided me with numerous learning opportunities, for which I am grateful. I'd like to convey my gratitude and humility to everyone who helped me to finish this report

Executive Summary

"Electricity Generation Company of Bangladesh Ltd" is one of the largest state owned power generation company under Power Division, Ministry of Power, Energy & Mineral Resources. The company started their journey in 1996 as Meghnaghat Power Company (MPC) Ltd. which was renamed as Electricity Generation Company of Bangladesh Ltd (EGCB) in 2004. Currently EGCB's generation capacity almost 954 MW with its three power plants at Narayanganj Area. The company adopted electronic procurement (E-gp) and enterprise resource management system (ERP) to facilitate its business. These two newly adopted technologies have already altered the manual procurement process. Process simplification and transparency in the procurement process gave a strategic advantage to the business in Bangladesh's power sector. We will evaluate all required data and information in this study to determine the transformation process and its impact at the organizational level.

The Company already obtained ISO 9001:2015, ISO-14001:2015, ISO 45001:2018 certifications as a part of its transformation. It ensure sustainability at all the functional levels. EGCB procurement procedure was also scrutinized by an ISO audit team and that was benchmarked against international standards.

Primary and secondary sources of information were used in this research. All collected data was correctly analyzed and represented in charts for easier comparison. The procurement process satisfies all of the known process transformation indicators.

Keywords: Procurement; ERP; E-gp; ISO; Strategic Advantage; Benchmark

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List of Acronyms

EGCB	Electricity Generation Company of Bangladesh
E-gp	e-Government Procurement
ERP	Enterprise Resource Planning
BERC	Bangladesh Energy Regulatory Commission
BFRS	Bangladesh Financial Reporting Standards
BPDB	Bangladesh Power Development Board
CCPP	Combined Cycle Power Plant
COD	Commercial Operation Date
COVID-19	Coronavirus Disease 2019
DPP	Development Project Proposal/Proforma
FE	Foreign Exchange
GSA	Gas Supply Agreement
GTCL	Gas Transmission Company Ltd.
GTG	Gas Turbine Generator
NLDC	National Load Dispatch Center
Nm3	Normal Cubic Meter
NOA	Notification of Award
O&M	Operation and Maintenance
PPA	Public Procurement Act
PPR	Public Procurement Rule
PV	Photo Voltaic
RDPP	Revised Development Project Proposal/Proforma
SDG	Sustainable Development Goals
SLA	Subsidiary Loan Agreement
T-Code	Transaction Code
STG	Steam Turbine Generator
CPTU	Central Procurement Technical Unit
CIPS	The Chartered Institute of Procurement & Supply
KPI	Key Performance Indicator
SDG	Sustainable Development Goals

Glossary

ERP	Enterprise resource planning is the integrated management of main business processes, often in real time and mediated by software and technology.
SAP	SAP stands for System Applications and Products in Data Processing. SAP is the market leader in ERP software
T-code	A T-code is a transaction code used whenever executing particular task in SAP ERP software.
PR	In SAP ERP system PR stands for purchase requisition or purchase estimation.
Workflow	Workflows are the activities needed to complete a task. Used to maintain approval hierarchy in SAP system.
PO	In ERP system PO stands for purchase order which is equivalent to contract in manual system.
Inventory	Inventory or stock refers to the goods and materials that a business holds for the ultimate goal of resale, production or utilization.
E-gp	National e-Government Procurement (e-GP) portal
TEC	Tender Evaluation Committee. This committee will Evaluate tender in E-GPsystem. Committee formed as per PPA-2006 and PPR-2008 guideline.
TOC	Tender Opening Committee. This committee will Open the tender in E-GPsystem. Committee formed as per PPA-2006 and PPR-2008 guideline.
AA	Approving Authority. Approve the tender document , Estimate etc as per DoFP

Chapter 1

Introduction

1.1 Background

Procurement is an essential process in both the public and private organizations. The business climate of today is changing quite frequently as a result of globalization. In order to obtain a competitive edge in the market, organizations are making strategic decisions. Public procurement is the process of acquiring products, works, and services using public funds. As public money is involved, procurement is crucial for state-owned organizations.

To guarantee transparency and fairness in public procurement, public procurement law has been introduced in Bangladesh. Bangladesh's public procurement system is decentralized, allowing each Ministry, Division, or Department to make purchases in accordance with their individual requirements.

To centralize and simplify the procurement process Bangladesh's government has adopted electronic government procurement. As a result, government-owned power plants rely on this portal for tendering and contract management. Bangladesh's Power Division recently began implementing Enterprise resource planning software to ensure proper resource utilization.

Power plants are vital to the country's economic development. Bangladesh's government is working to make SDG 2030 a reality, and one of the most important goals is to guarantee the proper use of limited resources. The government has properly recognized the critical importance of an effective, efficient, and dynamic process for better governance and sustainability. In light of this, the government is attempting to increase institutional transparency, accountability, resource use, green energy proportion, and, most importantly, procurement process transformation.

1.2 Best Procurement Practices in Organizations

Procurement process can be defined as best if there is non-discrimination & fairness, accountability and transparency, fair competition and openness at every stage. Most importantly, the value for money shall have to be ensured. Both corporate social responsibility and business goal can be achieved through adopting best practices in procurement.

1.2.1 CIPS Best Practices in Procurement Steps

Table 1: CIPS 13 Steps in Procurement [1]

SN	Best Practices in Procurement Steps
1.	Define business needs and develop specification
2.	Market analysis and make or buy decision
3.	Develop the strategy and plan
4.	Pre-procurement market test and engagement
5.	Develop documentation PPQ and detailed specification
6.	Supplier selection to participate in tender
7.	Issue tender documents
8.	Bid and tender evaluation and validation
9.	Contract award and implementation
10.	Warehouse, logistics and receipt
11.	Contract performance and improvement
12.	Supplier relationship management
13.	Asset management

[1] CIPS , The thirteen steps of the procurement process

1.2.2 Legal Framework for Public Procurement in Bangladesh

- Public Procurement Regulations 2003
- Public Procurement Act, 2006
- Public Procurement Rules, 2008
- e-GPGuidelines 2011
- Standard Tender Documents (STDs)
- Delegation of Financial Powers
- Procurement Processing and Approval Time table

1.3 e-GPand ERP System in Government Organization of Bangladesh

e-GPis known for the shortest form of electronic government procurement. e-GPimplemented in the year of 2006 to ensure transparency and competitive bidding. Initially at the tendering process was manual where coercive, collusion, fraudulent, corruption practices were dominating factors. In Bangladesh e-Government Procurement (e-GP) portal is developed and operated by Central procurement Technical unit (CPTU) under IMED of ministry of planning.

e-GP consists of 9 following modules [2]

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

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

[2] source: https://www.eprocure.gov.bd/aboutUs.jsp

1. **e-Tendering (e-Publishing/e-Advertisement, e-Lodgment, e-Evaluation, e-Contract award) System**
    - Annual Procurement Planning (APP) preparation and publishing
    - Standard Tender Document (STD) Library
    - Preparation and publishing Invitation to Tender
    - Preparation and publishing Tender Document
    - Online Pre-Tender Meeting
    - Publishing Tender Corrigendum / Addendum / Amendment
    - Online Tender / Application / Proposal preparation by Tenderers / Applicants / Consultants
    - Online Tender Submission / Tender Substitution / Tender Withdrawal
    - Online Tender Opening
    - Online Tender Evaluation by Technical Committees
    - Post Qualification
    - Online Negotiations
    - Issuance of Notice of Award (NOA)/ LOI
    - Online Contracts
2. **Procurement Management Information System (PROMIS):** Compliance monitoring through key procurement performance indicators **&** MIS reports
3. **Workflow management System**
4. **e-Contract Management System (e-CMS):** Work Plan Submission
    - Progress Report generation, submission / acceptance
    - Defining Payment Milestones
    - Running Bill Payment Processing

- Variation Order / Repeat Order
- Quality certification
- Work Completion Certificate
- Final Payment
- Supplier Rating
- Complaint and resolution database

5. **e-Payment System**
    - Registration Fee, Tender document purchase fee, and other services fee Collection
    - Receive Tender Security and performance security submission
    - Transactions for security release and forfeiture handling
6. **System and Security Administration**
    - E-Signature (Generation of Hash/Signature)
    - PKI based digital signature
    - Bid Encryption/ Bid Decryption
    - 128 Bit SSL
7. **Handling Errors and Exceptions**
8. **Application Usability & Help**
    - Integrated Inbox / Message Box
    - Integrated e-Mail / SMS Gateway
    - Dashboards for Procurement Performance Monitoring
    - Manuals for all users
    - Help desk support

An ERP system can be used to manage an organization's daily activities. ERP can handle tasks like procurement management, project management, plant maintenance, human resource management, and store management. Recently, Bangladesh's power division decided to implement an ERP system in various utilities.

The Ministry of Power, Energy, and Mineral Resources' Power Division won the "**Digital Bangladesh Award 2022**" for implementing Enterprise Resource Planning (ERP) to ensure efficiency, transparency, and accountability in the power sector.

ERP can be used to make :

- Quick decision ,
- Ensure transparency,
- Evaluation of performance ,
- Sharing Information

Examples of ERP software's: Oracle , SAP, Acumatica, SYS Pro etc.

ERP Modules:

- Financial Accounting (FI),
- Controlling (CO),
- Asset Accounting (AA),
- Sales & Distribution (SD),
- SAP Customer Relationship Management (SAP CRM),
- Material Management (MM),
- Production Planning (PP),
- Quality Management (QM),
- Project System (PS),

- Plant Maintenance (PM),
- Human Resources (HR),
- Warehouse Management (WM).

1.4 Aims and Objective of the Study

The purpose of this research is to determine the transformation brought by e-GPand ERP systems in power plants under the power division of Bangladesh. Positive transformation can lead to the ultimate goal of sustainability. In this study, data from power plants of EGCB used to find out the transformation process.

These systems enable process integration and digital transformation in the procurement. The necessary data has been gathered in order to achieve the goal. It assists us in determining the transformation of the procurement process in power plants.

1.5 Significance of the Study

Many studies on procurement process transformation have been done in different contexts. However, the prospective implementation of ERP systems in Bangladesh for government organizations, especially power plants, is very new. The combination of e-GPand ERP systems results in a positive change in power plant procurement and supply chain operations.

Spare parts for power plants, consumables, fuels, and so on are essential or bottleneck items. Because resources are limited, efficient resource utilization is essential for plant performance. Bangladesh's government has pledged to provide electricity at a low cost, which will only be feasible through resource efficiency. We can identify the transformation factors that drive the procurement process through E-GP and ERP systems in this study.

1.6 Limitation of Study

There are a total of 14 utilities in the power sector. Power production, transmission, and distribution are all handled by different utilities. This study takes into account only one electricity generation utility. The challenges of digital transformation in other utilities may vary from the selected one.

The necessary information to conduct the research in the border context is still unavailable. The use of ERP systems in the total power sector of Bangladesh may grow in the near future. Only then additional research opportunities will be created in this context.

Chapter 2

Organizational Context

2.1 Power Sector Scenario in Bangladesh:

Bangladesh's power industry is divided into three (three) major sectors. Electric power is primarily produced at power plants and then delivered to customers via high-voltage transmission lines and distribution networks.

Generation: Power plants at different areas of Bangladesh.

a) Bangladesh Power Development Board (BPDB)

b) Ashuganj Power Station Company Ltd. (APSCL)

c) Electricity Generation Company of Bangladesh (EGCB)

d) North West Power Generation Company Ltd. (NWPGCL)

e) Coal Power Generation Company Bangladesh Ltd. (CPGCBL)

f) Rural Power Company Ltd (RPCL)

e) Independent Power Producers (IPPs)

Transmission: Only one organization involved in high voltage transmission system.

a) Power Grid Company of Bangladesh Ltd (PGCB)

Distribution: Utility involved distributing the electric power to the customer end.

a) Bangladesh Power Development Board (BPDB)

b) Rural Electrification Board (REB)

c) Dhaka Power Distribution Company (DPDC)

d) Dhaka Electric Supply Company Ltd (DESCO)

e) West Zone Power Distribution Company Ltd (WZPDCL)

f) Northern Electric Supply Company (NESCO)

Table 2: Power Sector of Bangladesh	
Generation Capacity	**26,730 MW**
Highest Generation	**14,782 MW (16 April, 2022)**
No of Power Plants	**154**
Total Consumers	**44.5 Million**
Transmission Line	**14,546 Ckt. km**
Grid Sub-station Capacity (MVA)	**58,076**
Distribution Line	**6,29,000 km**
Distribution Loss	**7.74% (June 2022)**
Per Capita Generation	**608.76 KWh**
Access to Electricity	**100%**
SHS	**6 million**
Pre-Paid meter	**53,35,413**

Source: Power cell, updated 16th March, 2023

2.2 EGCB as a Power Generation Unit:

To complete the research, the performance of EGCB power plants was analyzed in various contexts.

Background of EGCB Ltd [3]

- On 23rd November 1996 BPDB formed Meghnaghat Power Company (MPC) Ltd.
- On 16th February 2004 the Meghnaghat Power Company (MPC) Ltd. has been re-named as Electricity Generation Company of Bangladesh (EGCB) Ltd. (an Enterprise of BPDB).

Electricity Generation Company of Bangladesh (EGCB) Ltd. was incorporated with Registrar of joint stock companies on February 16, 2004 to produce and sale of Electricity. EGCB has a plan to become a leading electricity generation company across the country.

[3] www.egcb.gov.bd

Table 3: EGCB Outline

Name of the Company	**Electricity Generation Company of Bangladesh Limited**
Business Type	**Power Generation.**
Registered & Corporate Office	**Unique Heights (level-15 & 16), 117 Kazi Nazrul Islam Avenue, Eskaton Garden, Dhaka-1217**
Website	www.egcb.gov.bd
Status of the Company	Public Limited Company
Authorized Capital	Tk. 5000,00,00,000.00
Paid up Capital	Tk. 37,89,72,000.00
Number of Shares issued	3,78,972 Shares @ Taka 1,000.00 each
Equity From GOB	Tk.832,75,41,875.00
Administrative Ministry	Power Division,Ministry of Power, Energy & Mineral Resources
Generation Capacity	954 MW
Vision	**Generation of Quality Electricity for the Betterment of the Nation**
Mission	**To excel in electricity business by generating efficient, reliable and cost effective electricity in an environmentally responsible manner to satisfy our customers.**
Logo	

2.3 Management of EGCB:

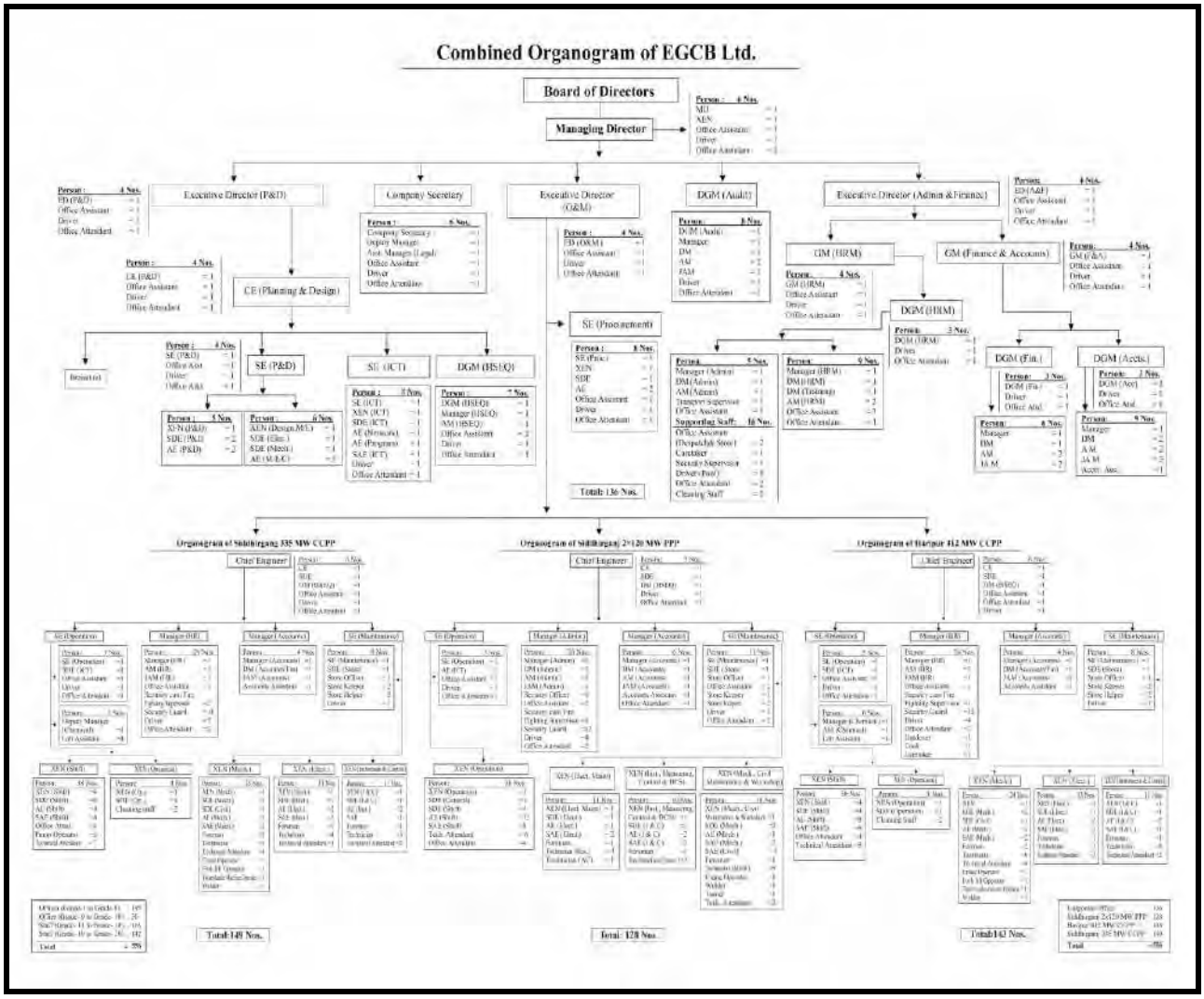

Figure 1: EGCB Organogram

2.4 Procurement Process of EGCB

EGCB mainly uses three funds for procurement 1) GoB 2) Development Partners fund such as World Bank, ADB, JICA, IDB etc and 3) its own funds . For using GoB fund EGCB needs to follow strictly Public Procurement Act-2006 and Public Procurement Rules-2008. EGCB's own procurement guide lines are used for their own fund. The procurement guide line is approved by the board of directors which is aligned with public procurement act and rules.

Procurement department headed by Superintending Engineer is responsible for international procurement. All the procurement of turnkey projects (national and international) is performed through Planning & Design department headed by Chief Engineer, Planning & Design. Power plant construction projects are mostly turnkey projects that are monitored and controlled by a project team led by a project director. Despite this, every head of the department has some sorts of procurement power within a specific value as per the Delegation of Financial Power (DoFP) of EGCB.

EGCB procure goods, works, and services through four procuring entities. There are two types of buying processes: centralized and decentralized. Centralized procurement has been carried out through the procurement department, and procurement authority has been delegated to various entities for decentralized process.

2.4.1 Procuring Entity

Procuring entity means an entity with both administrative and financial authority to carry out the procurement procedure. EGCB has four cost centers, each with its own procuring entity.

Four cost centers are as follows

- Siddhirganj 2x120 MW Peaking Power Plants
- Siddhirganj 335 MW Combined Cycle Power Plants
- Haripur 412 MW Combined Cycle Power Plants
- Corporate Head Office of EGCB

2.4.2 Delegation of Financial Power (DoFP)

The authority to approve any procurement has been delegated to various levels. The procurement procedure (estimate approval, evaluation committee approval, tender document approval, etc.) took place in accordance with financial power.

- As per EGCB's Procurement policy Managing director is the HEAD of procuring entities (HOPE).
- Approving Authority

Table 4: Delegation of financial power

SN	Step	Approving Authority	Goods (Million taka)	Works (Million taka)	Service (million taka)
1.	First	Managing Director	100	100	20
2.	Second	Executive Director (O&M/Admin & Finance/ P&D)	50	300	10
3.	Third	Chief Engineer /General manager	7.5	10	-
4.	Fourth	Superintending engineer / Deputy general manager	3	-	-
5.	Fifth	Executive Engineer/ Manager	-	-	-

2.4.3 Procurement Act & Rule followed in EGCB

Procurement rules and regulation: Procurement process of the company governed by the

- PPA 2006 (Public Procurement act of GoB).
- PPR 2008 (Public Procurement Rules of GoB).
- National e-Government Procurement (e-GP) Guideline.
- EGCB Procurement Policy
- DoFP of EGCB

2.4.4 Procurement Methods

- Foreign Procurement:
  - IOTM (International Open Tendering Method)

- IDPM (International Direct Procurement Method)

- Local Procurement:
  - OTM e-GP(Open tendering Method)
  - DPM (Direct Procurement method)
  - RFQ (Request for quotation method)
  - DCP (Direct Cash Purchase)

2.4.5 EGCB's Procurement Steps

- **Open Tendering Method**

STEP 1: APP & Budget Allocation (ERP)

STEP 2: Purchase Requisition/Estimate Approval (ERP)

STEP 3: From Tender to Contract award [In e-GPSystem]

STEP 4: Purchase Order (PO)/Contract Maintain [Both in ERP & e-GP system]

STEP 5: PG Maintain [ERP]

- **RFQ/DCP/DPM Method of Procurement**

All relevant steps can be completed in ERP System. By utilizing an ERP software, EGCB have been able to simplify the traditional procurement process for different methods.

2.4.6 Inventory Management

For Goods: Process completed by Store Department in ERP system.

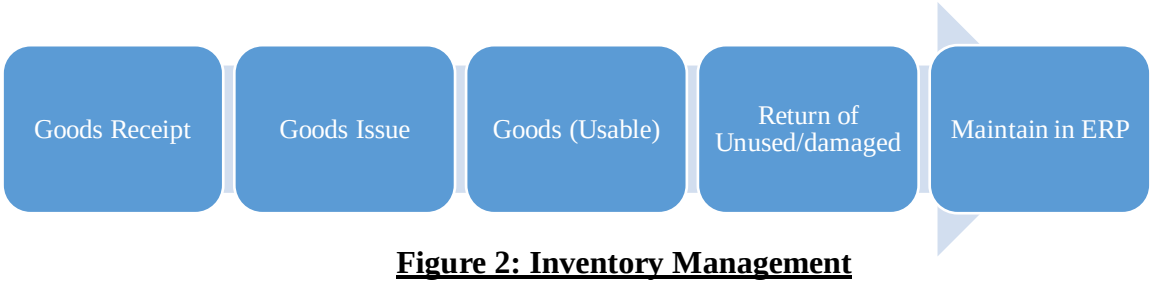

Figure 2: Inventory Management

2.4.7 Works / Service Acceptance

Works / Service Accepted in ERP system. Work or Service Completion Confirmation.

2.5 ERP Modules in EGCB Power Plants

EGCB started using ERP software which is delivered by **SAP**. SAP is a German based software company and the pioneered in the field of enterprise resource planning. From 2019 EGCB started procurement management, store management, plant maintenance management, financial control etc in SAP system.

Table 5: ERP Modules in EGCB

ERP (SAP) Modules in EGCB		
SN	**Module Name**	**Activity**
1.	Financial and Controlling (FICO)	Manage all the financial Data
2.	Human Capital Management (HCM)	HR management , Pay roll, Attendance,
3.	Material Management (MM)	1) Purchasing/Procurement and supply management 2) Material/Inventory and warehouse Management 3) Master Data
4.	Plant Maintenance (PM)	Manage all the Maintenance activity (Corrective/breakdown maintenance, Notification, cost settlement , record keeping of man material etc.
5.	Project System (PS)	Manage project throughout the entire project lifecycle.
6.	Production Planning (PP)	Business Plan (Sales and distribution record and planning)

2.6 Procurement of Goods/Service/Works in ERP

Table 6: Procurement Step with T-code

Step No.	SAP Step Description	T-Code	Procurement step
1	Prepare of Procurement Requisition	ME51N	Procurement Requisition
2	Examination and Recommendation of PR	ME52N	
3	Approval of Procurement Requisition	SBWP	
4	Prepare Tender Document	CV01N	Tender Process
5	Create Recipient List	CVI1	
6	Edit Recipient List	CVI2	
7	Document Distribution	CVI8	
8	Check and Recommendation of Tender	SBWP	
9	Approval of Tender Document	SBWP	
10	Record Tender Information	ME41	
11	Update Tender Information	ME47	
12	Reporting Evaluation Tender	CV01N	
13	Approval of Evaluation Report	SBWP	
14	Prepare Contract Document	ME31K	Contract Process
15	Check Contract Approving Authority	ME32K	
16	Approve Contract	ME35K	
17	Create Purchase Order	ME21N	
18	Check and Recommendation of Purchase Order	ME22N	
19	Approval of Purchase Order	SBWP	

2.6.1 Creation and Approval of APP

Table 7: APP Creation steps and T-code

Step No.	Step Description	T-code
1	Create request related to APP	SBWP
2	Check stock report	MB5B
3	Prepare APP	ME51N
4	Check and recommendation	ME52N
5	Approve APP	SBWP
6	Add Actual dates of events	ME52N

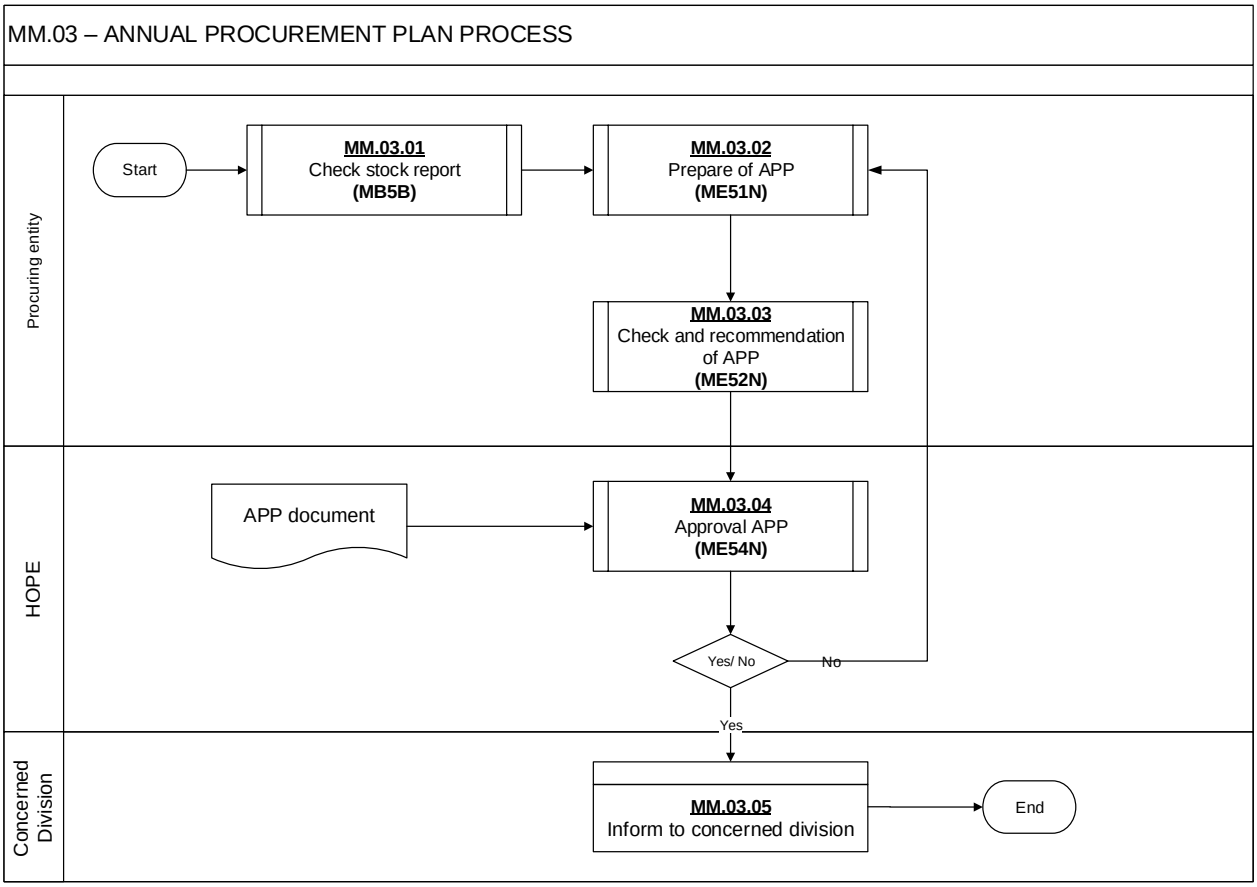

Figure 3: APP Approval Flow Diagram

2.6.2 Preparation/Approval of Purchase Requisition/Estimation

In ERP system purchase estimation is defined as purchase requisition.

Table 8: Purchase estimation approval steps and T-code

Step No.	Step Description	T-Code
1	Prepare of Procurement Requisition	ME51N
2	Examination and Recommendation of PR	ME52N
3	Approval of Procurement Requisition	SBWP

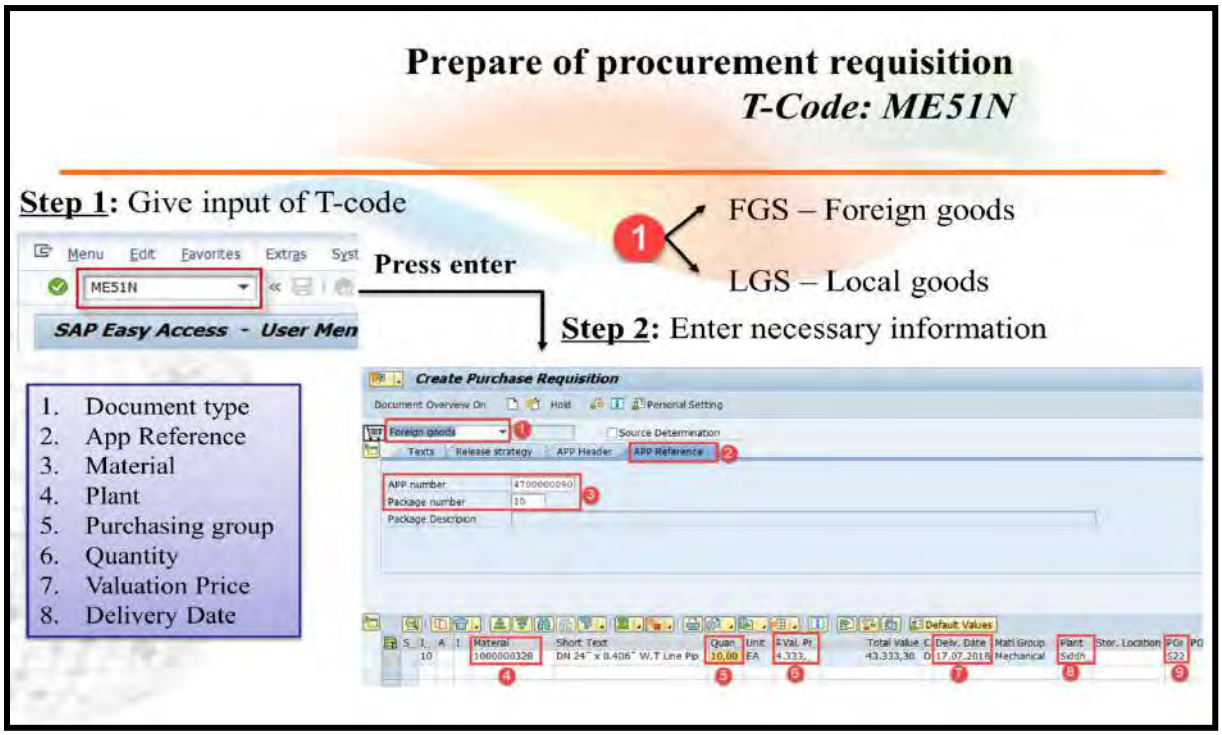

Figure 4: Purchase estimation/requisition preparation

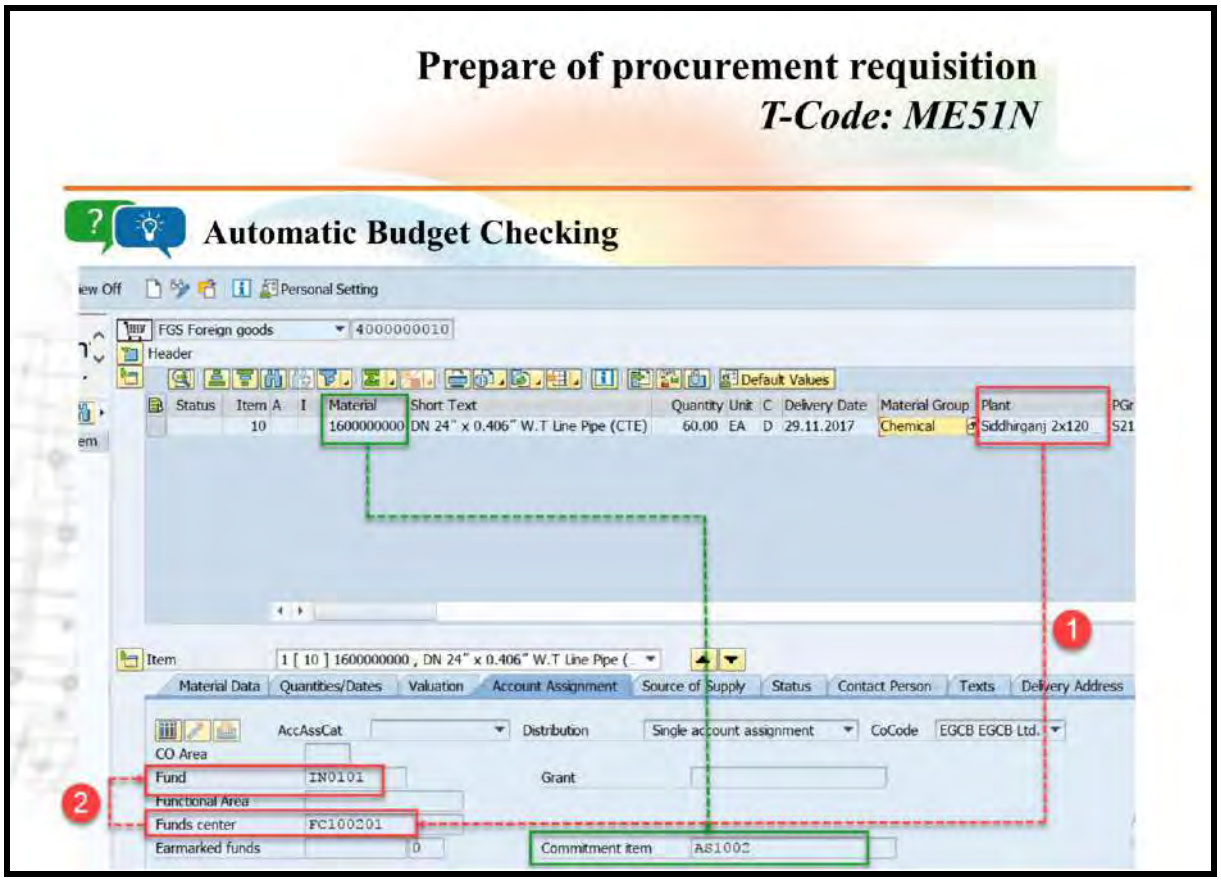

Figure 5: Automatic Budget Checking (1)

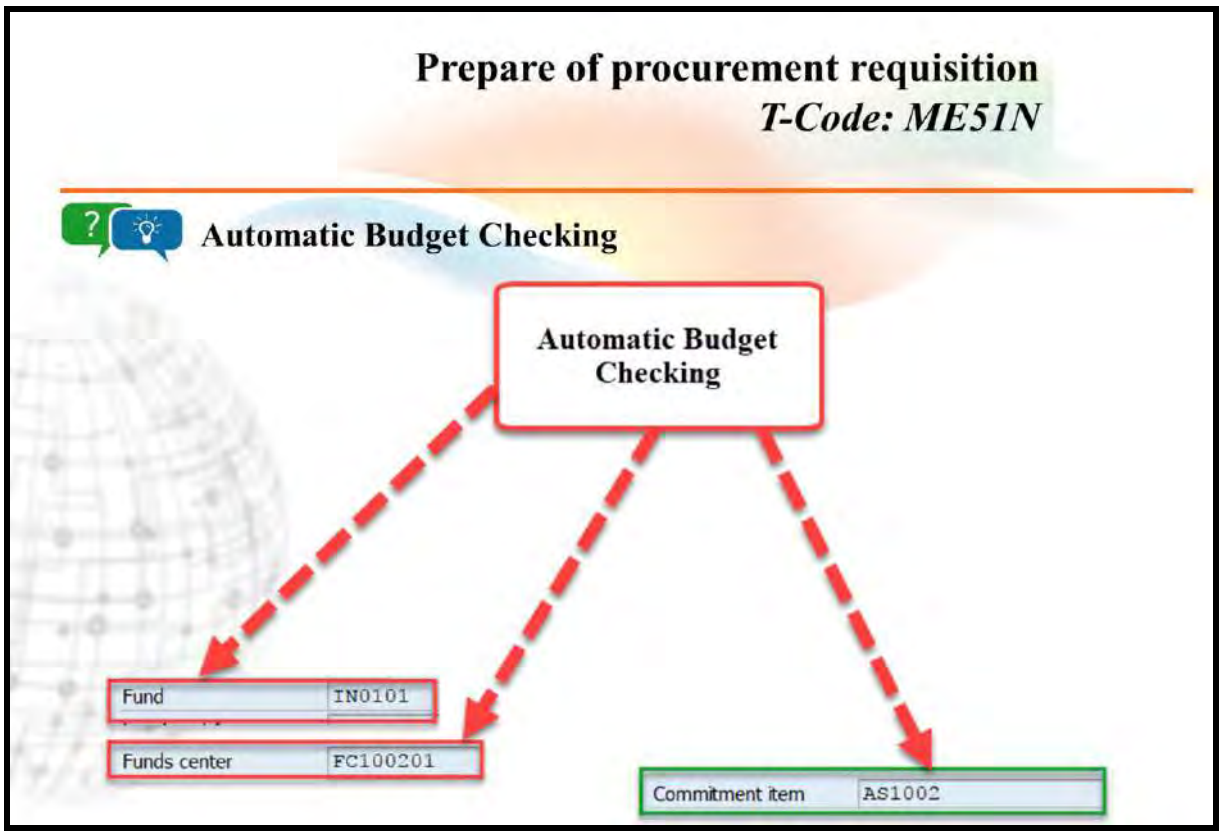

Figure 6: Automatic Budget Checking (2)

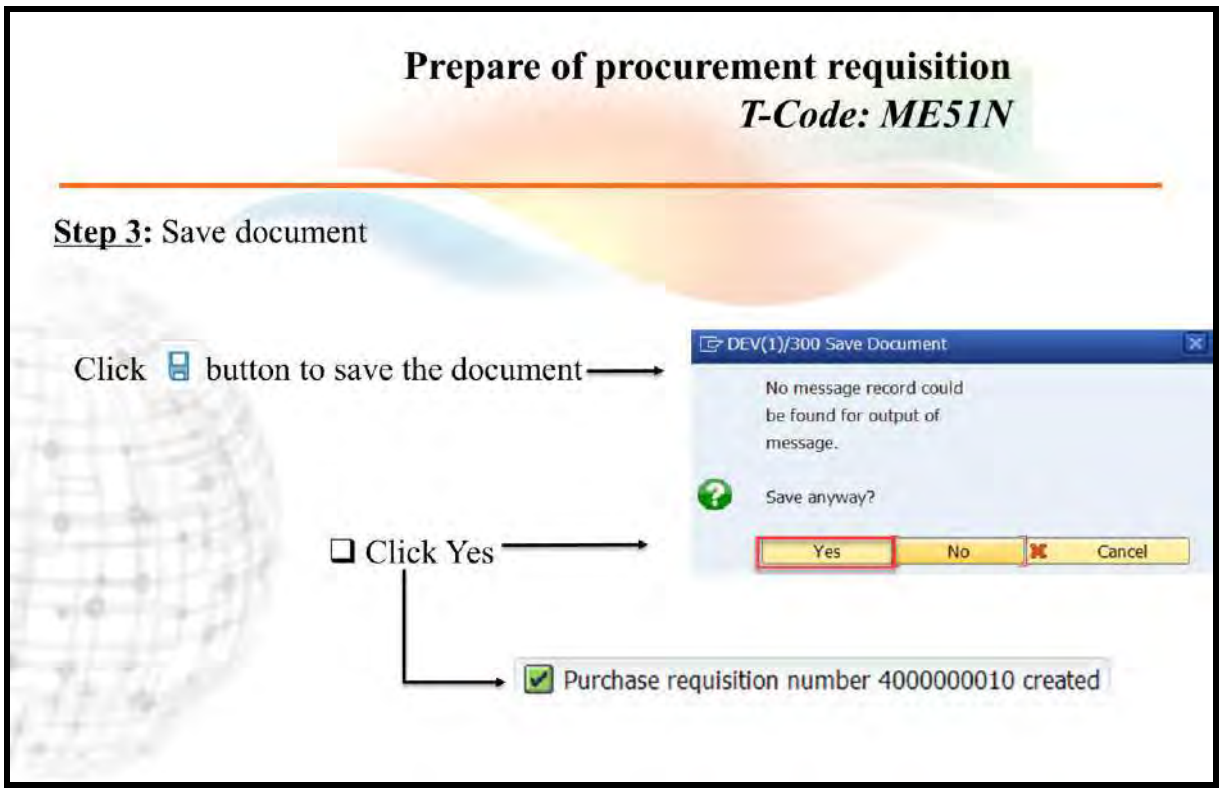

Figure 7: Procurement Estimate Saving

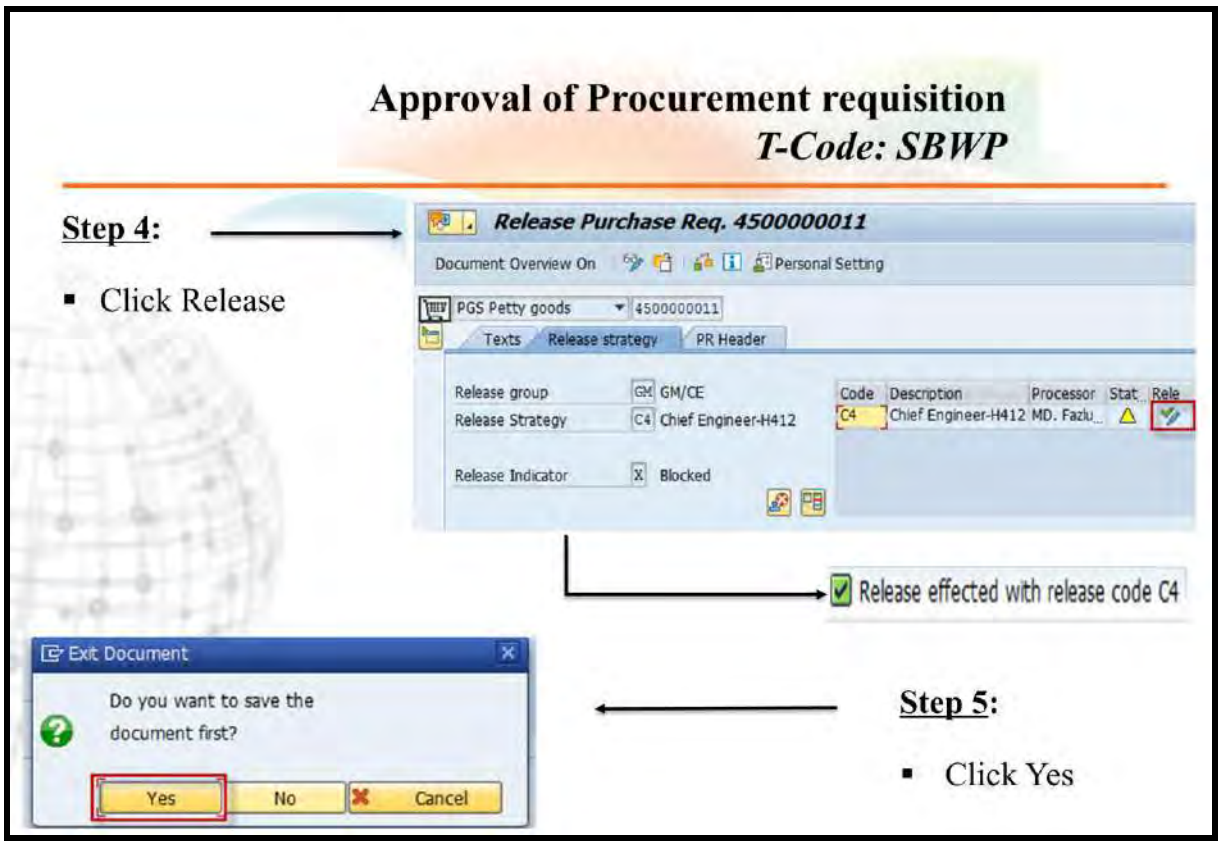

Figure 8: Procurement Estimation Approval

2.6.3 Tender Document Processing and Approval

Table 9: Tender Document Processing Steps and T-code

Step No.	Step Description	T-Code
1	Prepare Tender Document	CV01N
2	Create Recipient List	CVI1
3	Edit Recipient List	CVI2
4	Document Distribution	CVI8
5	Check and Recommendation of Tender	SBWP
6	Approval of Tender Document	SBWP
7	Record Tender Information	ME41
8	Update Tender Information	ME47
9	Reporting Evaluation Tender	CV01N
10	Approval of Evaluation Report	SBWP

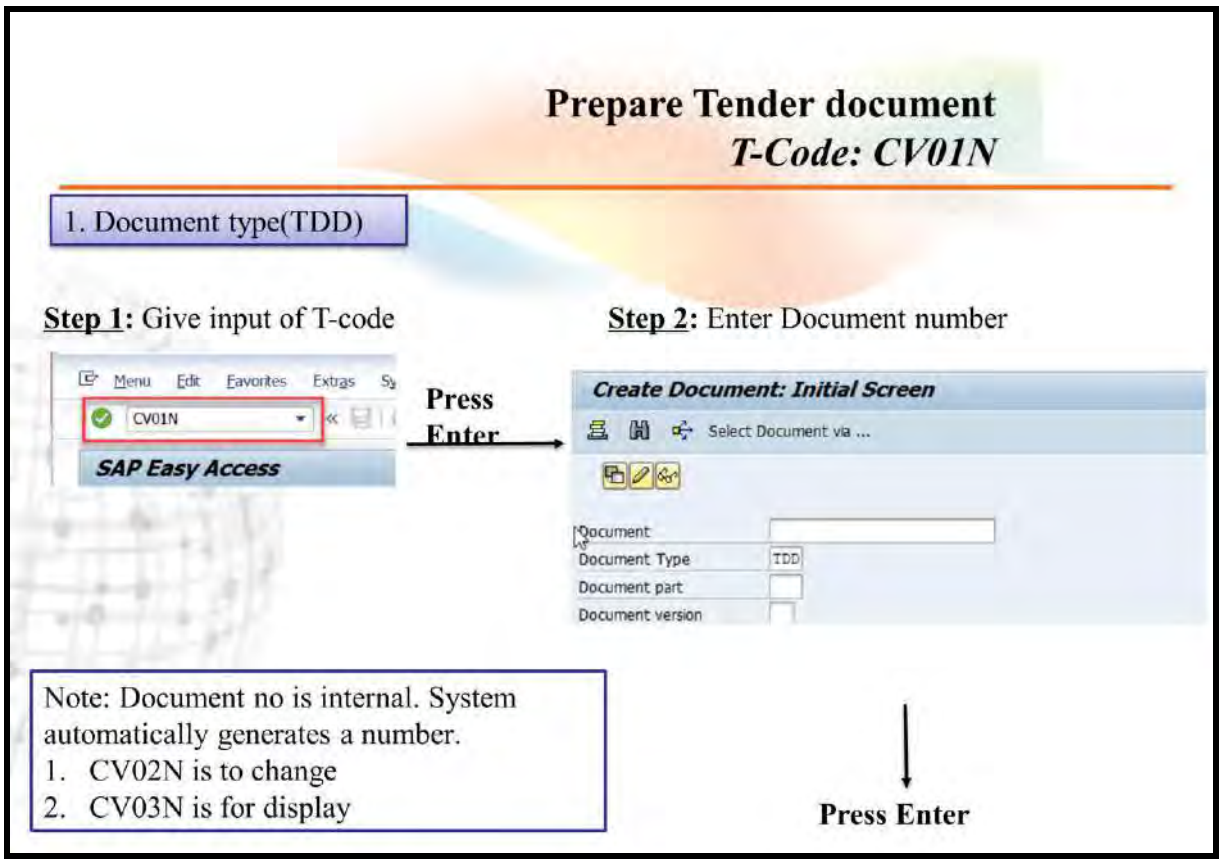

Figure 9: Tender Document Preparation (1)

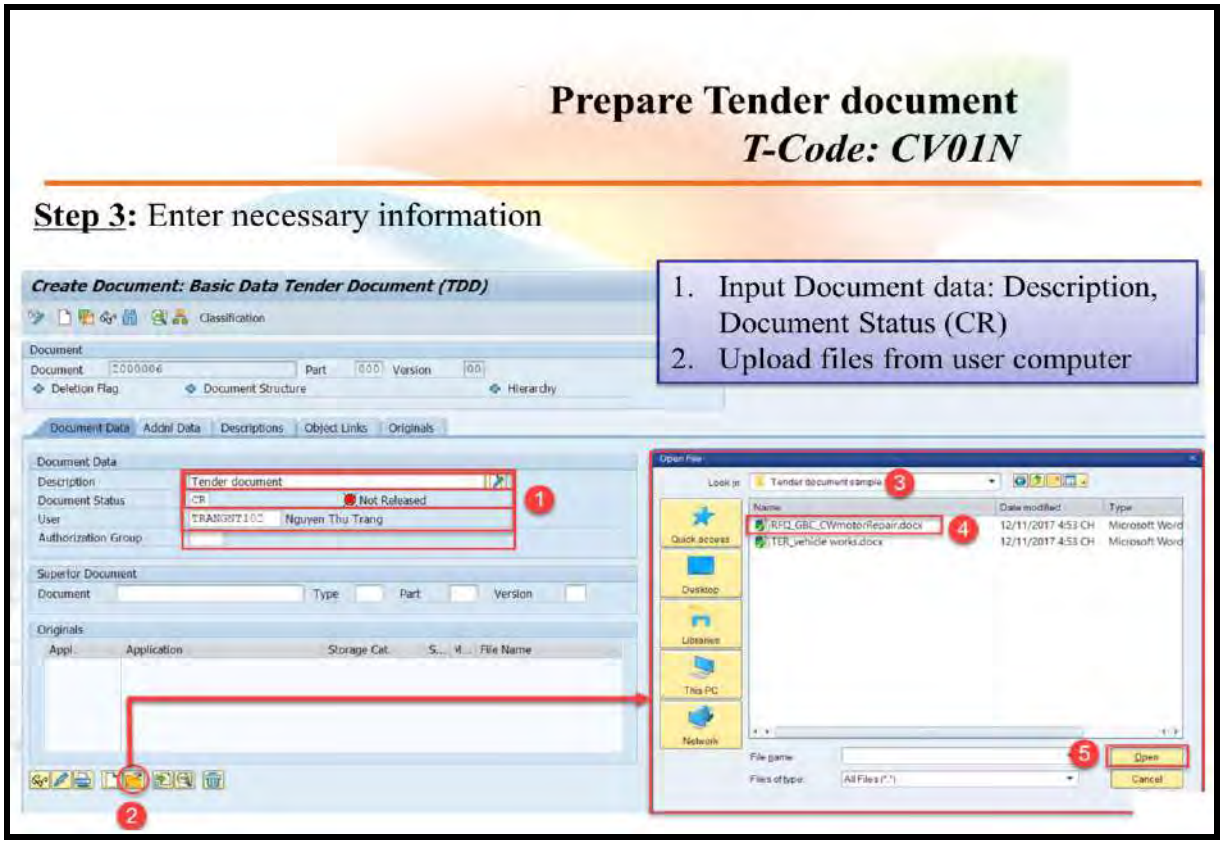

Figure 10: Tender Document Preparation (2)

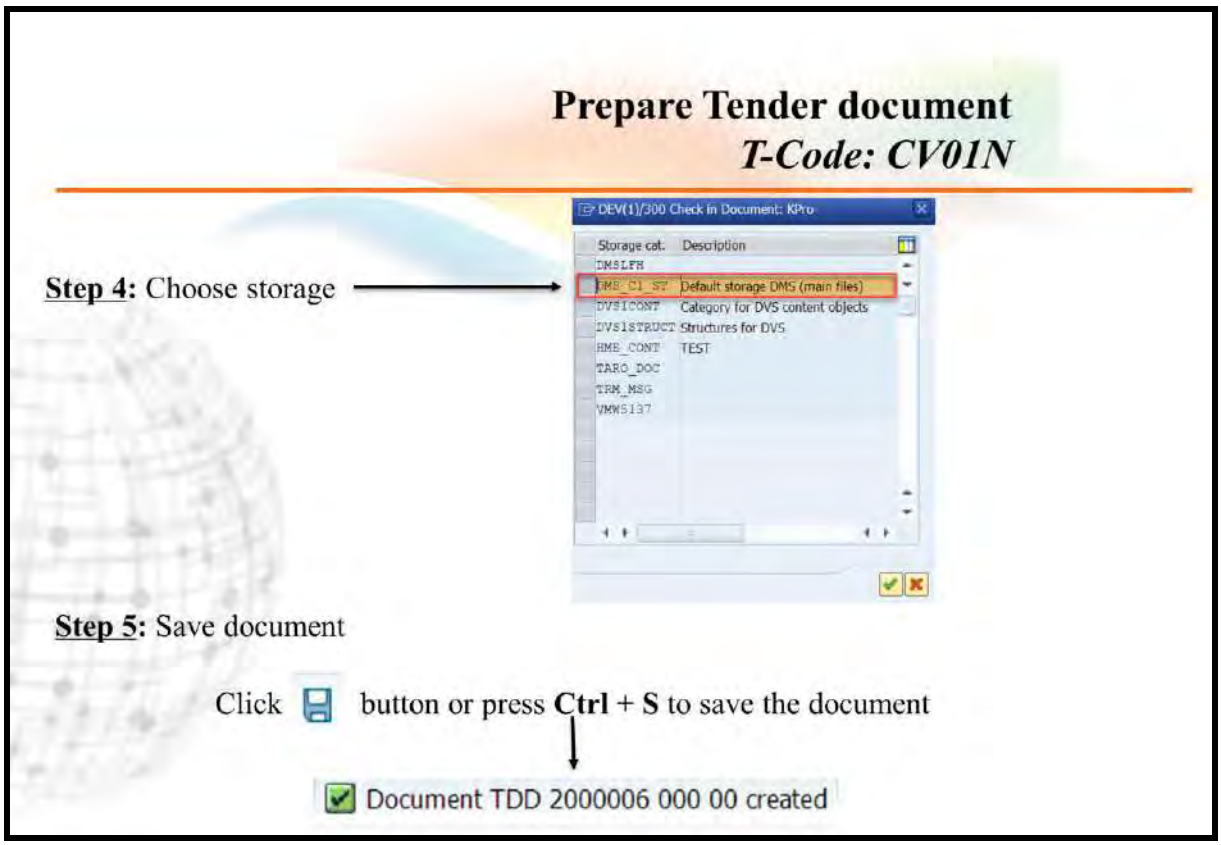

Figure 11: Tender Document Preparation (3)

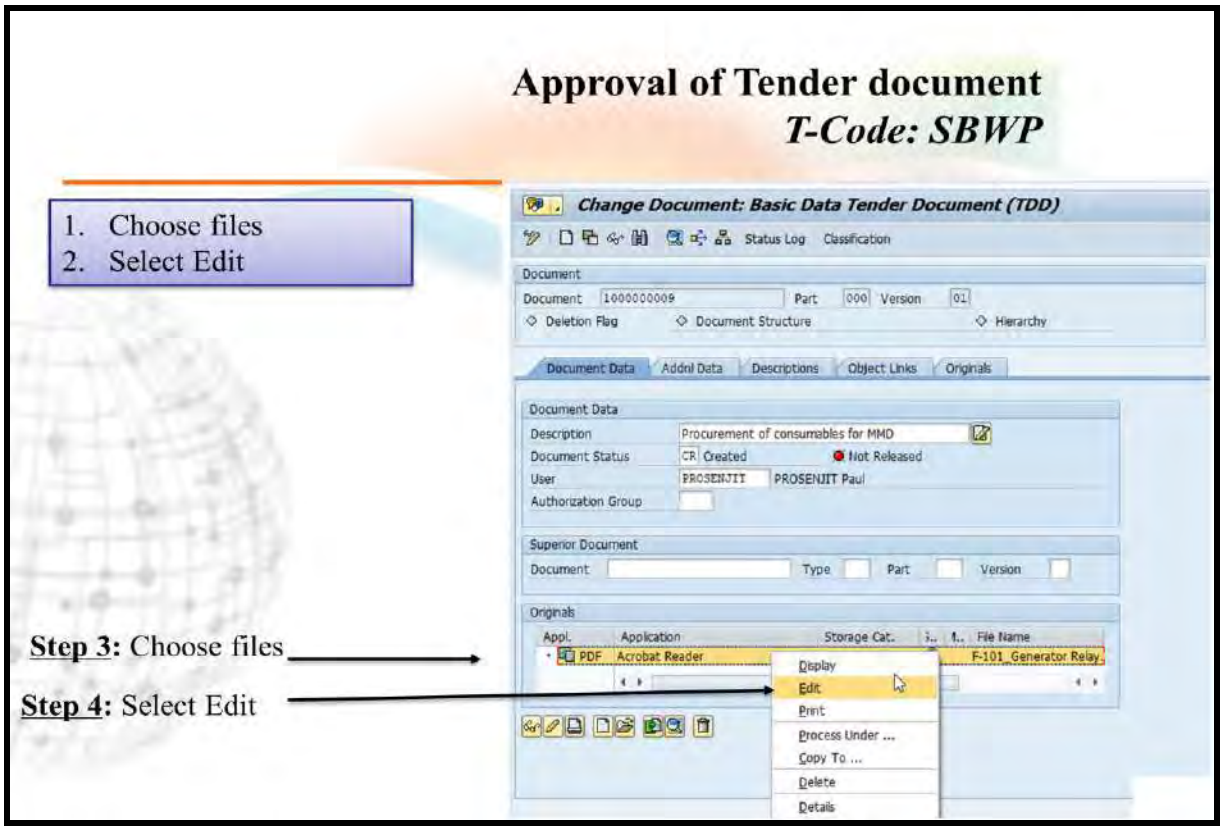

Figure 12: Approval of Tender Document (1)

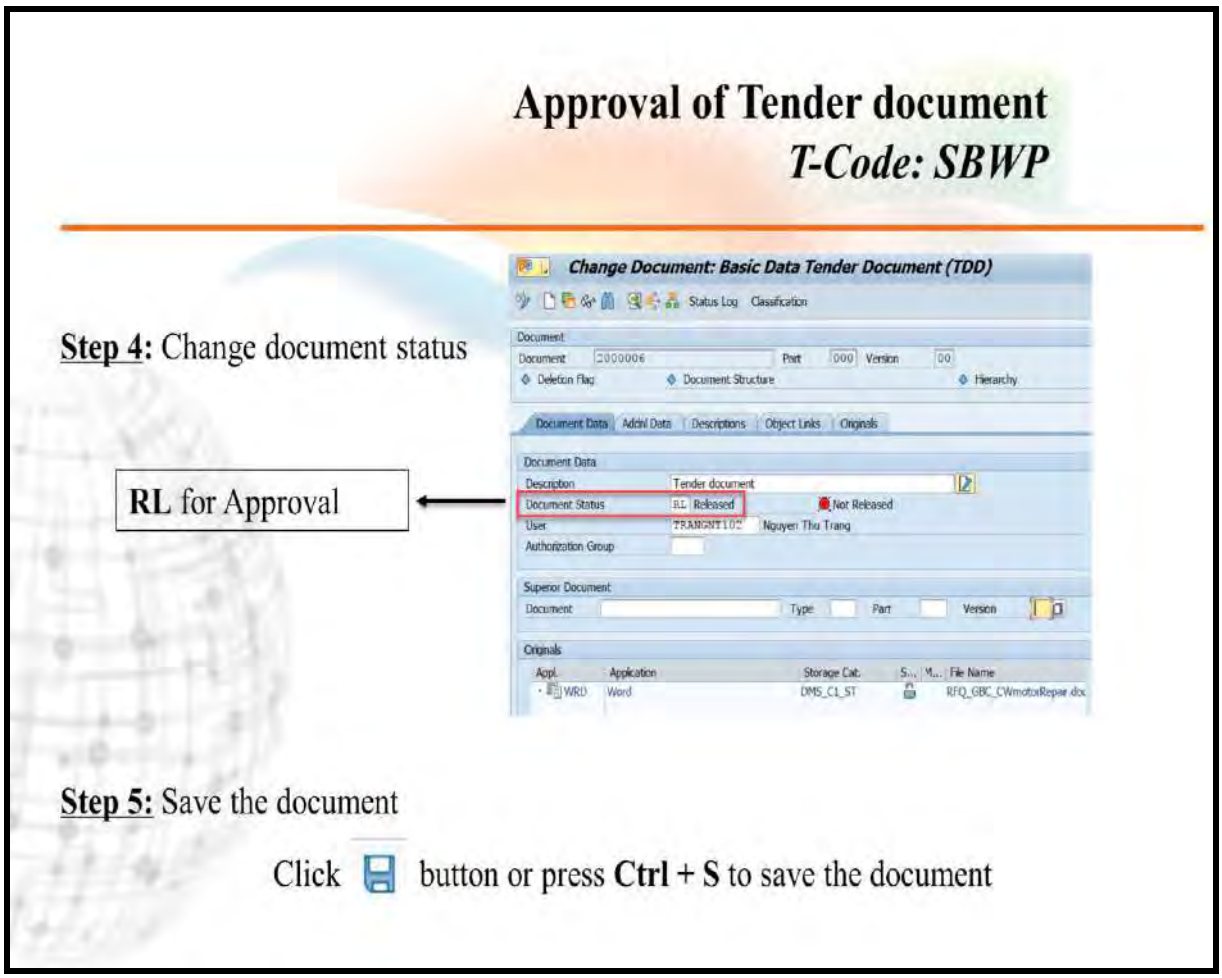

Figure 13: Approval of Tender Document (2)

2.6.4 Evaluation Report Approval

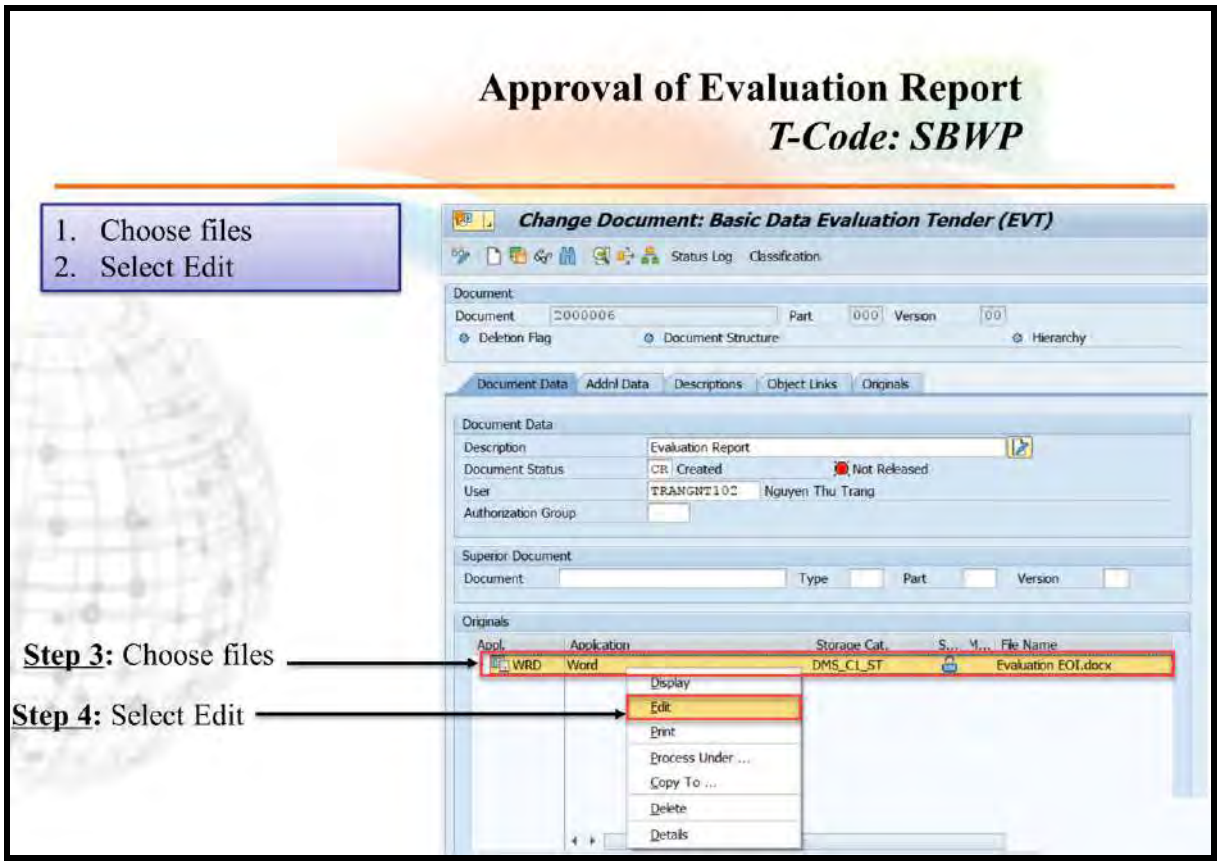

Figure 14: Approval of Tender Evaluation Report (1)

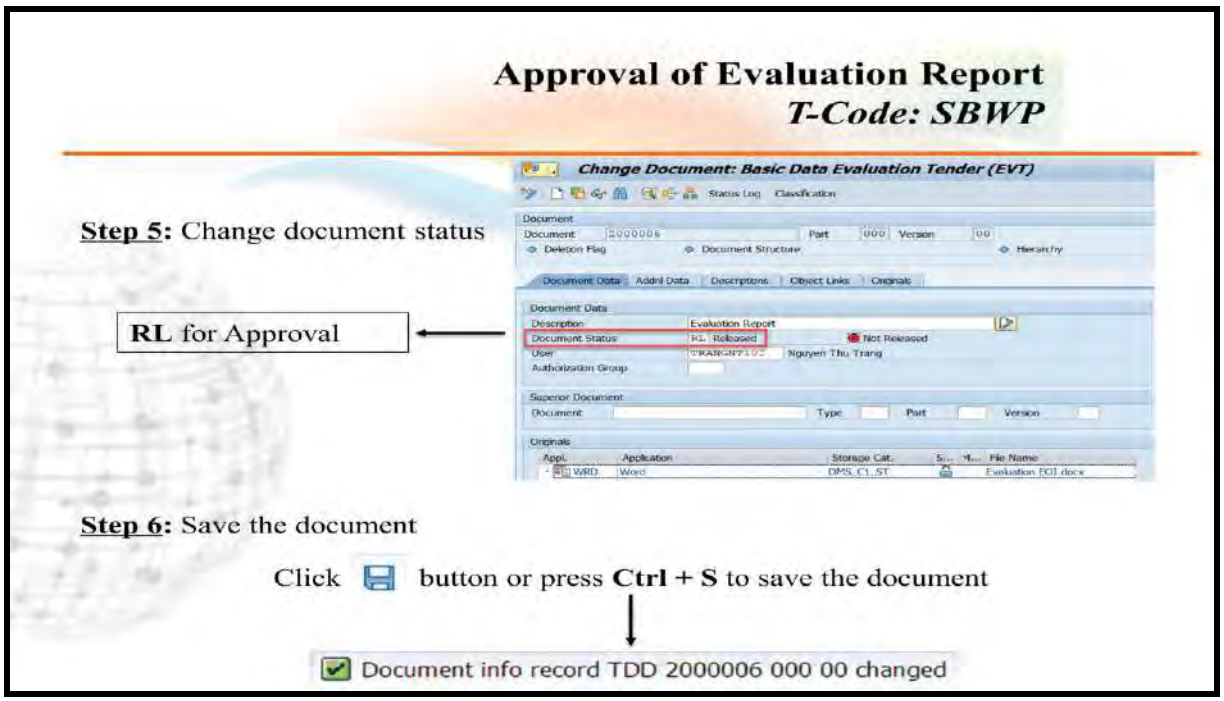

Figure 15: Approval of Tender Evaluation Report (2)

2.6.5 Contract Approval and Management

Contract documents can be prepared and approved in the ERP system in accordance with DoFP. Contract information such as last delivery date, performance guarantee (PG) validity date, Time extension period, Contract value, Quantity, and so on can be stored and notifications generated as needed.

Contract details can also be maintained in the E-GPsystem. e-Contract Management System (e-CMS): Encompasses all e-Contract Management processes, such as preparing and submitting a work plan, defining milestones, tracking and monitoring progress, generating reports, performing quality checks, generating running bills, vendor rating, and generating a completion certificate.

Table 10: Contract Approval Steps and T-code

Step No.	Step Description	T-Code
1	Prepare Contact Document	ME31K
2	Check Contract Approving Authority	ME32K
3	Approve Contract	ME35K
4	Create Purchase Order	ME21N
5	Check and Recommendation of Purchase Order	ME22N
6	Approval of Purchase Order	SBWP

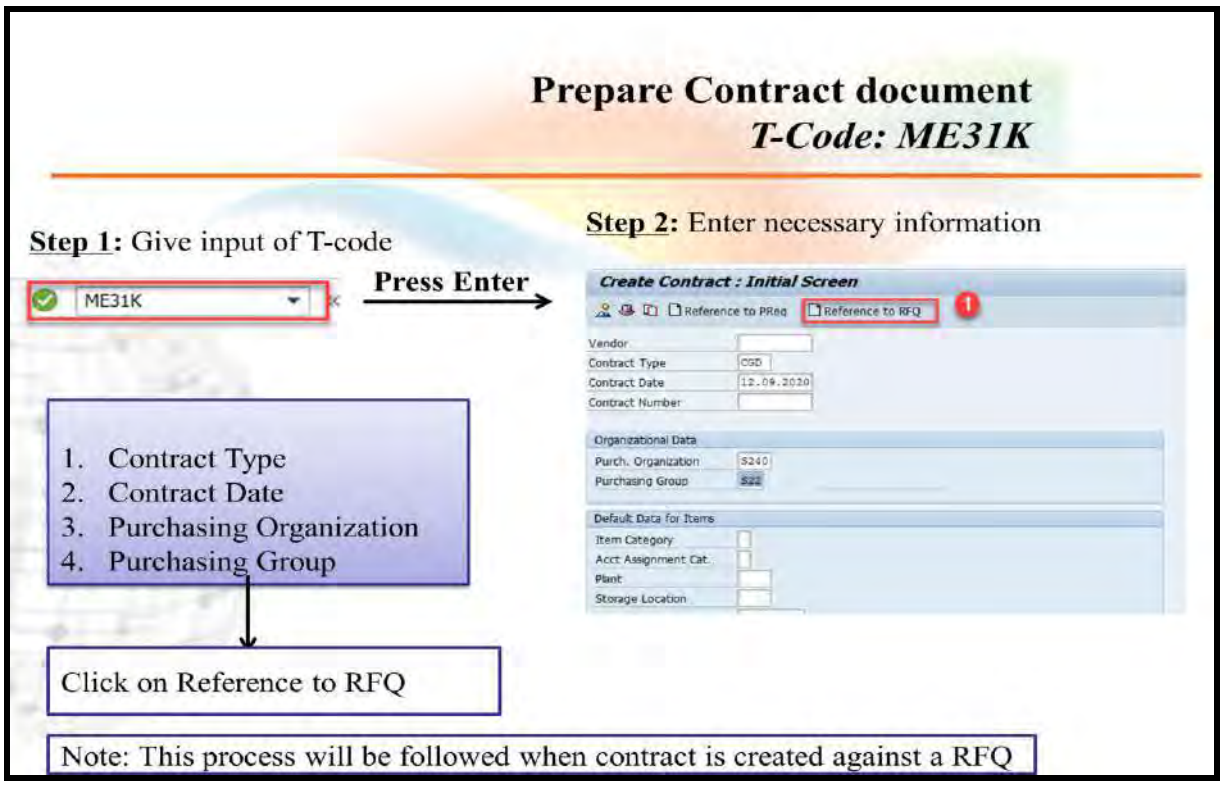

Figure 16: Preparation of Contract Document

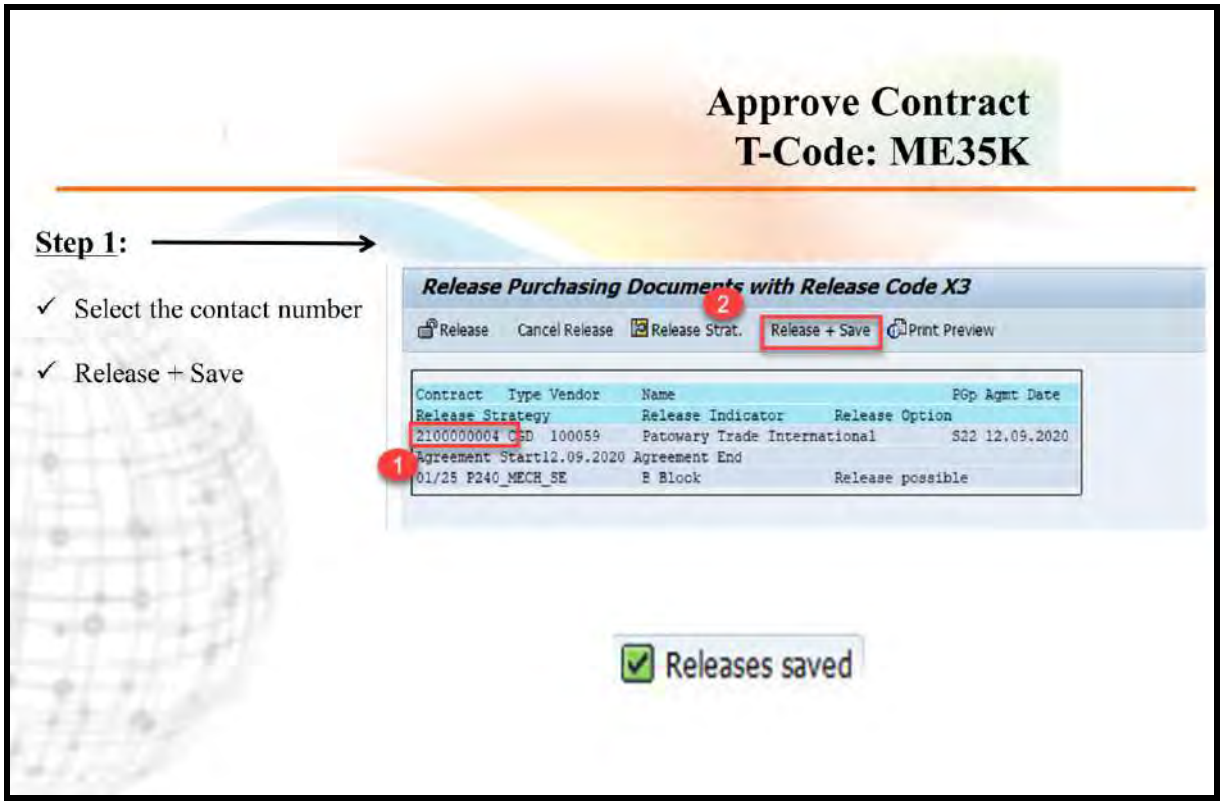

Figure 17: Approval of Contract Document

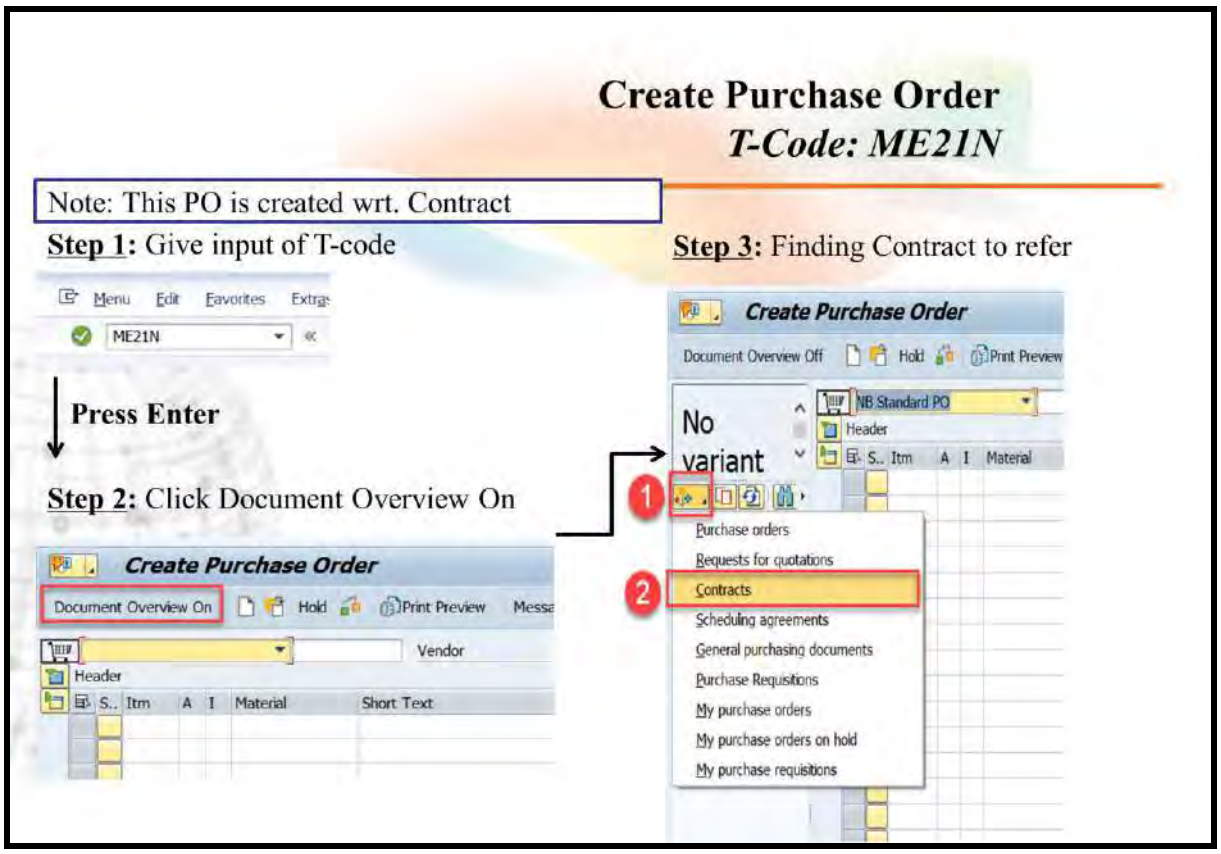

Figure 18: Creation of Purchase Order (1)

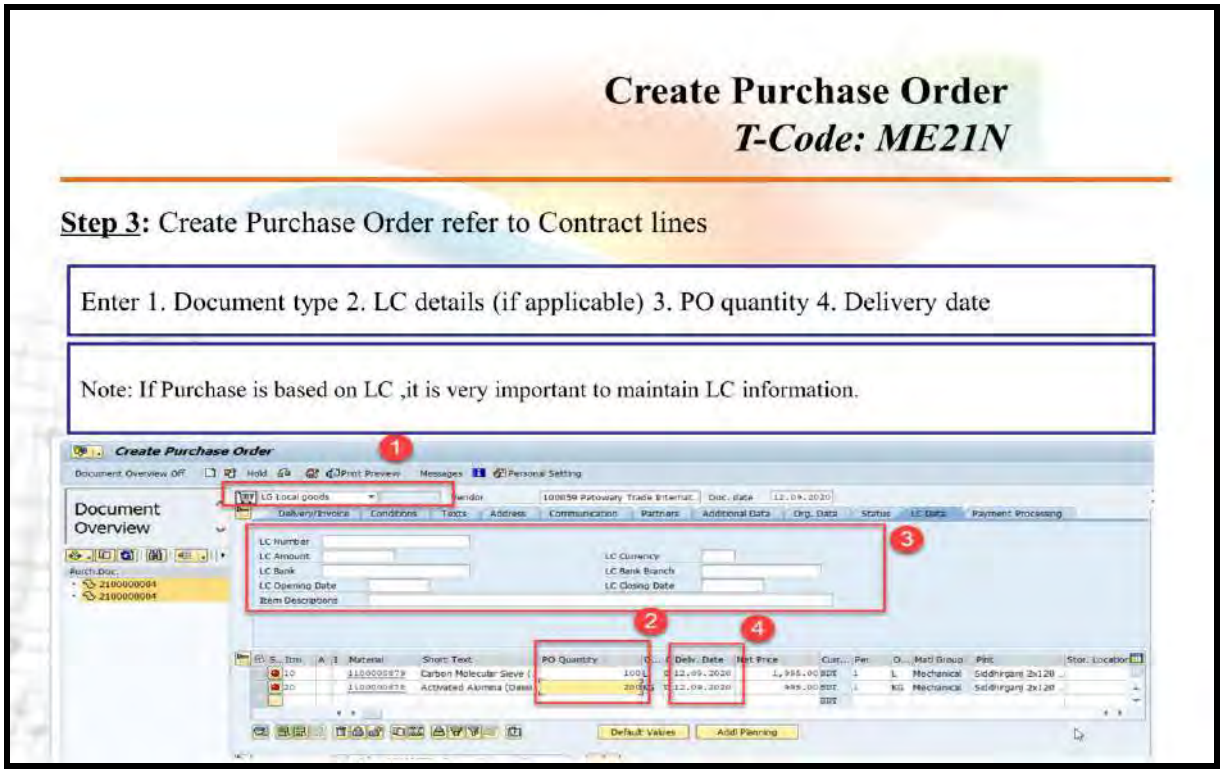

Figure 19: Creation of Purchase Order (2)

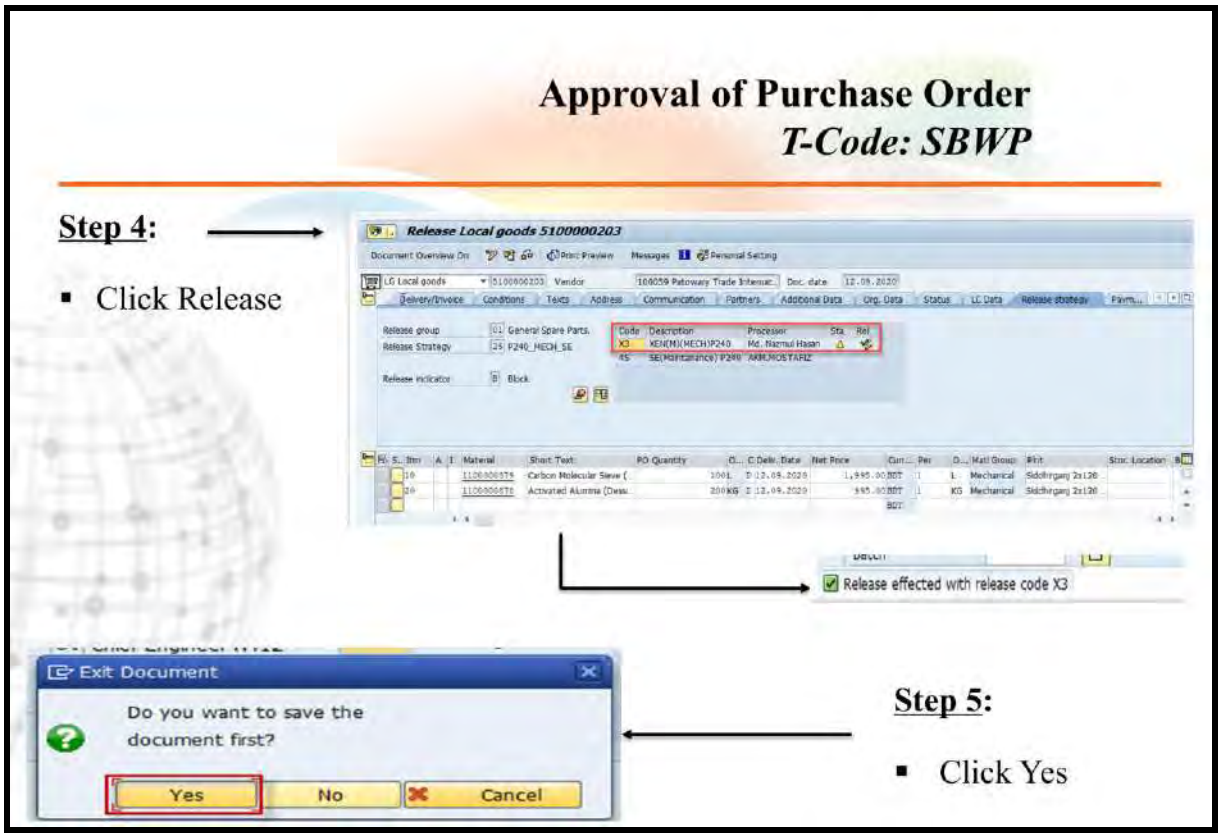

Figure 20: Approval of Purchase Order

2.7 Procurement Steps Breakdown in ERP and e-GP

- **Procurement Planning - Steps done in ERP system**

  - Assess procurement needs
  - Estimate cost
  - Decide approving authority
  - Decide method
  - Decide total time of delivery/ completion
  - Approve procurement plan

- **Preparation of Tender document - Steps done in e-GP system**

  - *Use STD*
  - *Customize ensuring consistency with Rules*

- **Invitation For Tenders - Step done in E-GPsystem**
    - *Advertisement*
    - *CPTU/PE website*
    - *Development Gateway Market (dgmarket) website for donor funded procurement*
- **Preparation of Tender (by Tenderer) - Step done in e-GP system**
- **Preparation for Receipt of Tender by PE- Step done in e-GP system**
- **Submission of Tenders- Step done in e-GP system**
- **Opening of Tenders (by TOC)- Step done in e-GP system**
- **Evaluation of Tenders (by TEC)- Step done in e-GP system**
    - *Preliminary examination*
    - *Technical responsiveness*
    - *Financial evaluation*
    - *Post-Qualification*
- **Approval of Evaluation Report (by AA)- Step done in e-GP system**
- **Contract Award (by PE) - Step done in e-GP system**
    - *Issue Notification of Award (NOA) by PE*
    - *Receipt NOA*
    - *Submission of PG*
    - *Contract Signing*
- **Contract Administration/implementation (by PE)- Step done in e-GP & ERP system**
- **Payment , Performance Evaluation, Budgeting - Step done in e-GP & ERP system)**

Chapter 3

Literature Review

Few research on ERP systems in Bangladeshi power sector have been conducted. The study is limited to the process transformation of EGCB's power plants. There have been some academic investigations conducted on Bangladesh's public procurement process. However, e-GP is used by a number of power generation/transmission and distribution utilities.

The use of ERP in the procurement process is very unique in Bangladesh's power industries. In order for a business to be more efficient, an ERP system is used to control the cost of goods/works and service. The procurement process can be visualized from beginning to the end using an ERP system. Company executives can quickly access information and use it to make sound decisions.

For this study Primary data is gathered through interviews with employees who are actively involved in the procurement process. Moreover, Secondary data sources included the company's annual report, annual performance agreement (APA), company profile, and numerous other company papers and publications.

Chapter 4

Research Methodology

4.1 Introduction

The methodology specifies the techniques for gathering and analyzing information for the research activity. For this research, both primary and secondary survey data will be used in next chapter. As primary data, open-ended questions were posed to several EGCB stakeholders. A questioner (Annex-A) has been developed and used to obtain the relevant primary data. Additionally, statistics from the Annual Performance Agreement (APA) and the company's annual reports are used as secondary sources of information.

4.2 Data Collection and Translation

To collect primary data, various stakeholder groups were chosen at random, including internal EGCB personnel, international and local suppliers, and service provider groups. For data analysis, a total of 20 responses were collected.

EGCB's annual reports for 2017-18, 2018-19, 2019-20, 2020-21, and 2021-22 were examined for secondary data. To obtain the necessary information for this research, performance agreements signed between EGCB and the Power Division of Bangladesh were evaluated, and the achievements of years 2020-21, 2021-22, and 2022-23 were severely scrutinized.

Using Microsoft Excel and Microsoft Word, the acquired data was evaluated and plotted.

4.3 Range of the Study

EGCB, a government power generation unit, used both ERP and e-GP system to revolutionize its procurement process. The new method is consistent with all government procurement policies. This technique enhanced the procurement quality and removed delay in the procedures. This type of digital revolution secures Bangladesh's electricity sector's sustainability. In chapter 5, we will examine the following indicators in depth to justify the transformation process of EGCB.

1) Cost & time 2) Efficiency 3) Quality 4) Relationship with stakeholders 5) Transparency in procurement process

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Chapter 5

Major Findings and Observations

5.1 Overview

This chapter contains the main findings and observations of this study. It is divided into four sections. Section one outlined and set the overview and process transformation indicators for this study. Section two has analyzed primary data gathered during the interview procedure. Section three consists of data collection and analysis of secondary material (APA, Reports etc.). All of the information gathered is scrutinized in the fourth part titled Discussion and Findings.

5.1.1 Paybacks of Procurement Process Transformation

A clear vision and strategy are needed for process transformation. The transformation of the procurement process generates potential benefits and value for the company. During this study, five major benefits of were identified:

1. **Reduction of cost & time:**

- The ERP system can be used to prepare purchases estimation. Price records for previously purchased goods are accessible in the ERP system. Price analysis can be performed in an ERP system. Estimation processing and approval duration reduced significantly.
- Store inventory can be readily checked in the ERP system. Unnecessary purchasing can be prevented. Every level of EGCB management has access to the present inventory.

- During the estimate preparation process, technical specifications can be verified. These are already configured for each material in ERP system.
- Tender Document preparation and approval , Contract and performance guarantee management is much more easier in ERP system.

2. **Efficiency improved:** The use of an ERP system reduced the time and effort required for EGCB's procurement procedure. Old processes have been supplanted by automation and new technology.
3. **Quality Improvement:** Increasing the quality of goods and services obtained by any organization can guarantee the best value for money. The procedure can be tracked and monitored using ERP software. Delays in delivery and non-performing vendors can be readily identified.

   The ERP system's recordkeeping capabilities make supplier evaluation and monitoring simpler.
4. **Relationship with stakeholders improved:** It is simpler to evaluate suppliers. Strong relationships can be established with high-performing vendors.
5. **Increased transparency:** It is now simpler to track and monitor procurement activities thanks to the implementation of ERP. EGCB can improve transparency while decreasing the risk of fraudulent activity.

5.1.2 Drivers for Procurement Process Transformation

1. **Implementing Electronic Procurement System**
   - In EGCB manual procurement system have replaced completely with e-GP and ERP system
   - Procurement process time reduced.

2. **Implementing New Process and Procedure**

   - New policy adopted to prepare procurement process more user in ERP software.
   - New approval workflow created in SAP system as per DoFP. Purchase estimation, Tender Document, Evaluation Report and contract management is incorporated in ERP software.

3. **Training and Development**

   - Training provided to all the officers related with EGCB's Procurement process.
   - Training server created for the research and development activity.

4. **Monitoring and Evaluation**

   - Continue monitoring of evaluation is ensured in transformed procurement process. Regular review and effective changes are conducting in the ERP process to make the system more effective.

5.1.3 Indicators of Procurement Process Transformation

Table 11: Process Transformation Indicators

SN	Description	Transformation Indicators
Q-01	APP, Estimation Preparation and Approval time reduced due to ERP System and tendering in e-GPsystem	Time
Q-02	Tender Document Processing Time reduced by using ERP & E-GPsystem	Time
Q-03	Quality of Supply and Service Obtained from different vendor improved.	Quality
Q-04	Vendor Evaluation and performance analysis is much easier in ERP and E-GPsystem.	Process
Q-05	Relationship with stakeholders improved	Relationship
Q-06	Transparency in procurement process improved due to ERP system	Transparency
Q-07	Supplier and service provider getting required information more quickly	Process

Q-08	End to end visibility in total procurement process improved by Using ERP system	Process
Q-09	Contract management is much easier in ERP and e-GP system	Process
Q-10	Overall Cost of Procurement Reduced	Cost

This study has chosen ten procurement-related topics. These are linked to six key process transformation markers. These indicators' state will be analyzed using both primary and secondary data for this research. The direction of change in indicators will decide whether or not process transformation is successful.

5.2 Primary Data Analysis

Questionnaire survey has been conducted on the officers from EGCB but also from other relevant stakeholder groups (Supply Company). The respondents were selected randomly.

Table 12: Summary of responders

Organization	Attribute	Frequency	% Total frequency	Remarks
EGCB	Employee Related with Procurement	16	80%	Internal 80%
GE (General Electric)	Foreign Supply/Service Provider	1	5%	External 20%
M/S Lalin Enterprise	Local Supply	1	5%	
M/S Mohor Chand Miah	Local Works	1	5%	
M/S Sahjada and Brothers	Local Service Provider	1	5%	
	Total	20	100	

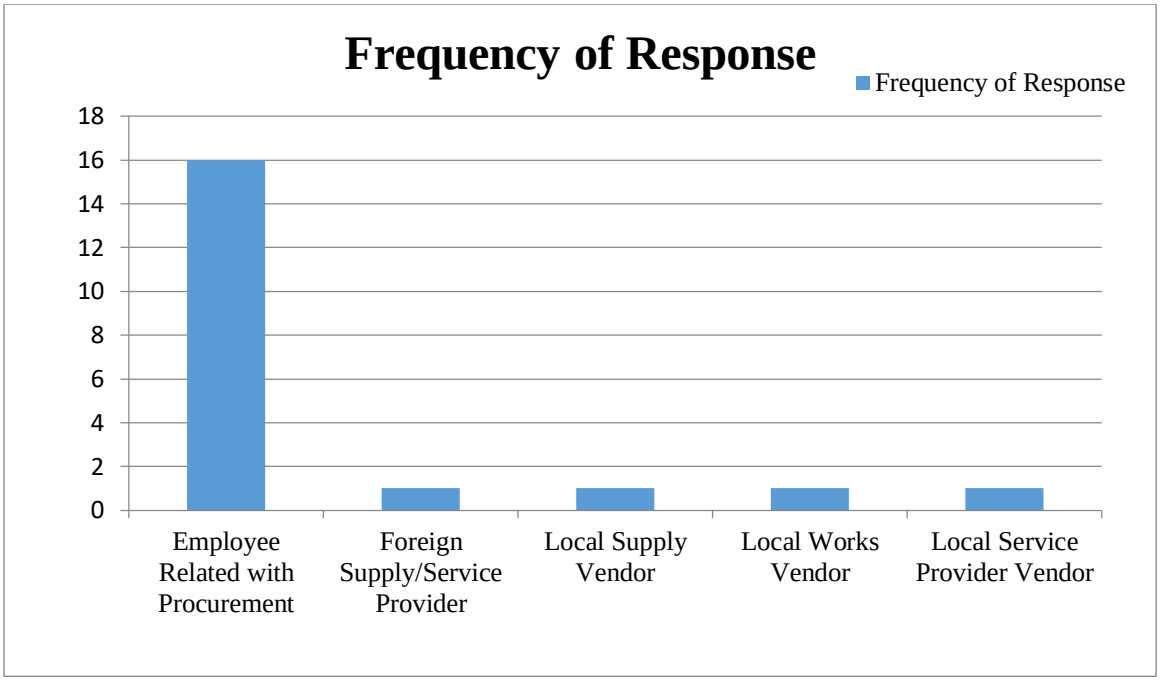

Chart 1: Response Frequency

Table 13: Frequency Distribution of the Respondent's Response

Question number	Frequency Distribution (Weightages)					Total Response
	Strongly disagree (1)	Disagree (2)	Neutral (3)	Agree (4)	Strongly Agree (5)	
Q-1	0	0	0	5	15	20
Q-2	0	0	1	2	17	20
Q-3	0	0	2	5	13	20
Q-4	0	0	2	2	16	20
Q-5	0	0	4	8	8	20
Q-6	0	0	4	3	13	20
Q-7	0	0	2	1	17	20
Q-8	0	0	2	2	16	20
Q-9	0	0	1	1	18	20
Q-10	0	0	1	2	17	20

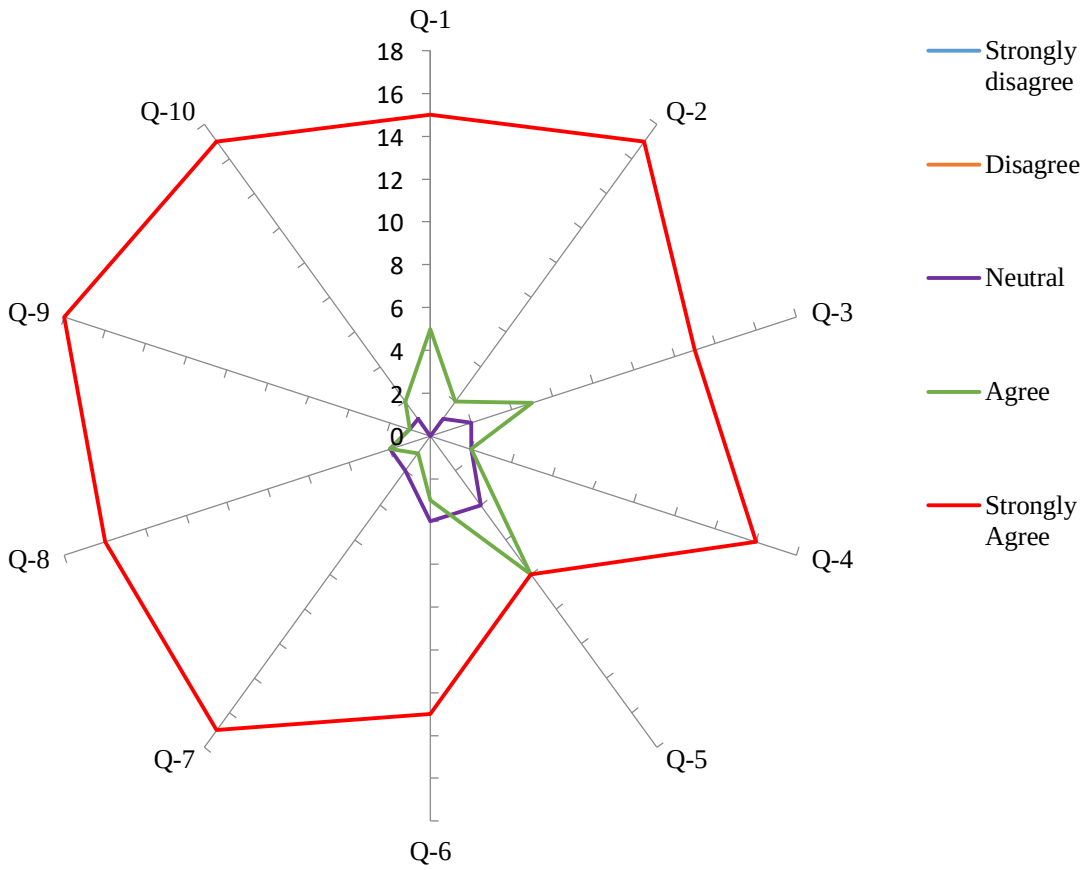

Chart 2: Frequency Distribution of Responses

Table 14: Frequency Distribution of the Respondent's Response in Percentages

Question number	Frequency Distribution (Weightages)					Total Response (100 %)
	Strongly disagree (%)	Disagree (%)	Neutral (%)	Agree (%)	Strongly Agree (%)	
Q-01	0	0	0	25	75	100
Q-02	0	0	5	10	85	100
Q-03	0	0	10	25	65	100
Q-04	0	0	10	10	80	100
Q-05	0	0	20	40	40	100
Q-06	0	0	20	15	65	100
Q-07	0	0	10	5	85	100
Q-08	0	0	10	10	80	100
Q-09	0	0	5	5	90	100
Q-10	0	0	5	10	85	100

Table 15: The Central Tendencies of Frequency Distribution

Question No	Total Number Obtained after 20 responder	Mean	Median	Mode	Standard Deviation
Q-01	95	4.75	5	5	0.4330
Q-02	96	4.80	5	5	0.509
Q-03	91	4.55	5	5	0.669
Q-04	94	4.70	5	5	0.640
Q-05	84	4.20	4	4	0.748
Q-06	89	4.45	4	4	0.805
Q-07	95	4.75	5	5	0.622
Q-08	94	4.70	5	5	0.640
Q-09	97	4.85	5	5	0.477
Q-10	96	4.80	5	5	0.509

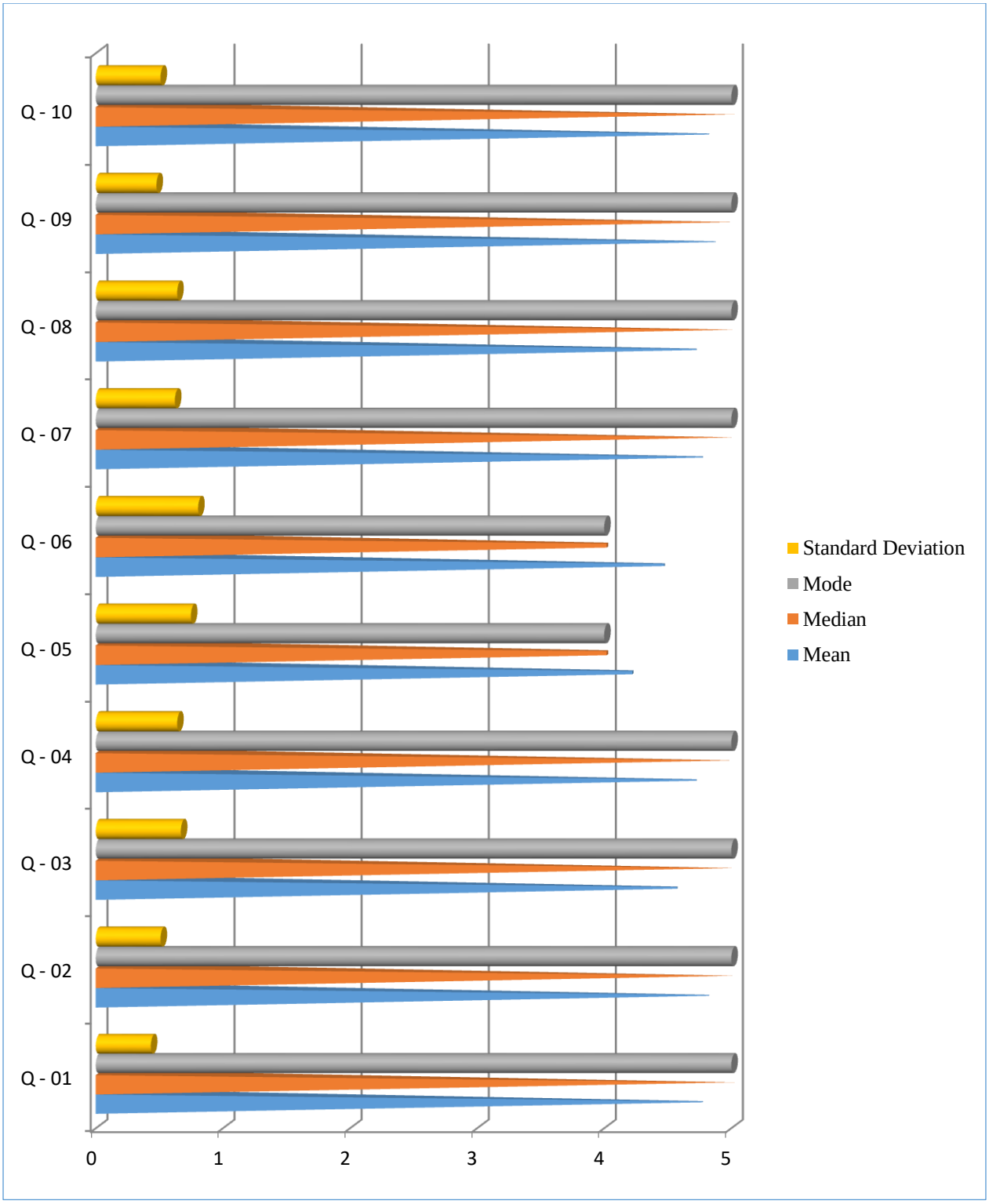

Chart 3: Central Tendencies and Standard Deviation of Responses

5.3 Secondary Data Analysis

Table 16: EGCB's APA Target (procurement) last 3 years

Target Description	Target	Achievement		
		2020-21	2021-2022	2022-2023 (First 6 Month)
All information and process completed and updated in ERP system (Including procurements and other module)	100 %	1	1	**1**
E-GPTender Completed	100 %	1	1	**1**
APP Approved and published in website	30 th July 2022	1	1	**1**
All procurement completed as per APP	100 %	1	1	**1**
Budget release as per allocation	100 %	1	1	**1**
Bill Payment	100 %	1	1	**1**
Total		6	6	**6**
Scale range : 1= 100 %, Achievement , 0.5= 50 % Achievement, 0= 0 % Achievement				

Table 17: E-procurement completed in last five fiscal years

FY Year	Total No's of e-procurement Completed
2017-18	74
2018-19	94
2019-20	78
2020-21	52
2021-22	136

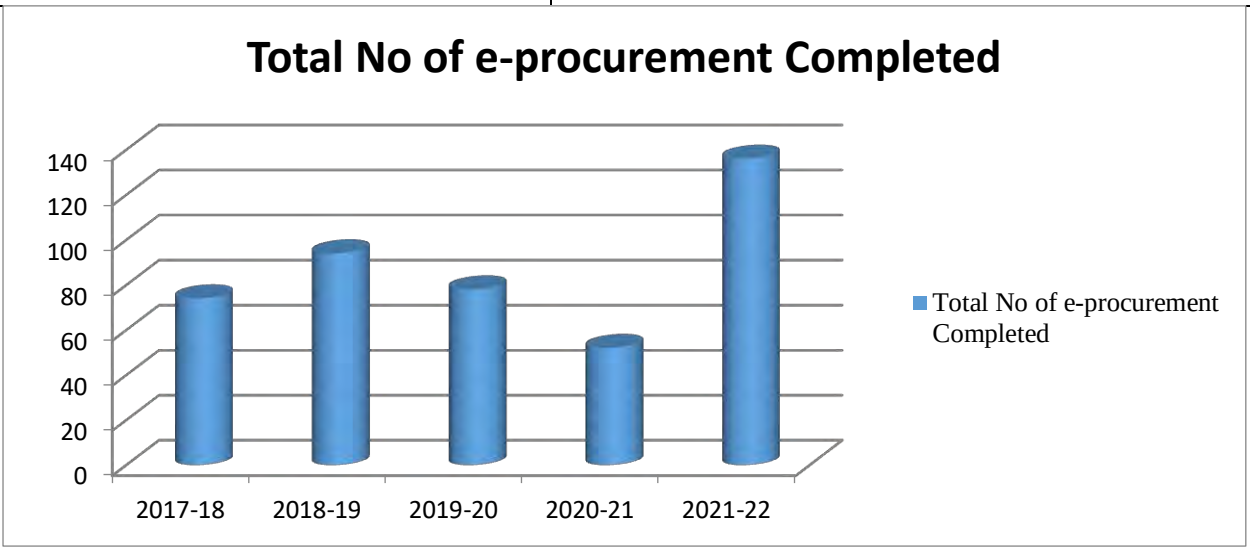

Chart 4: Comparison of Number of Procurement Year wise

ISO Certification; EGCB obtained certification from the International Organization for Standardization (ISO). ISO certification confirms that EGCB's management system, manufacturing method, service, or documentation procedure meets all standardization and quality assurance requirements.

Audit Date: **10th November , 2022**

Certificate Start date: **13th March, 2023**

Under certification, EGCB includes the following scopes and standards listed below

Scope of certification:

- Generation and Supply of power to the national grid
- Human Resource Development
- Procurement
- Office Activities

ISO Standards:

1) ISO 9001:2015; ISO 9001 is defined as the international standard that specifies requirements for a quality management system (QMS)

2) ISO 14001:2015; ISO 14001 is an internationally agreed standard that sets out the requirements for an environmental management system.

3) ISO 450001:2015; ISO 45001 is an international standard for health and safety at work developed by national and international standards committees independent of government.

EGCB's procurement is also subject to the ISO audit procedure. There, the procedure satisfied all of the requirements. It indicates that the procurement process is being transformed in the correct direction..

5.4 Discussion and Findings

Table 18: Primary Data Comparison

SN	Description	Neutral (%)	Agree (%)	Strongly Agree (%)	Mean	Mode	Median	Standard Deviation	Comments
Q-01	APP, Estimation Preparation and Approval time reduced due to ERP System and tendering in e-GPsystem	0	25	75	4.75	5	5	0.4330	Time Reduced
Q-02	Tender Document Processing Time reduced by using ERP & E-GPsystem	5	10	85	4.80	5	5	0.509	Time Reduced
Q-03	Quality of Supply and Service Obtained from different vendor improved.	10	25	65	4.55	5	5	0.669	Quality Improved
Q-04	Vendor Evaluation and performance analysis is much easier in ERP and E-GPsystem.	10	10	80	4.70	5	5	0.640	Process Simplified
Q-05	Relationship with stakeholders improved	20	40	40	4.20	4	4	0.748	Relation Improved
Q-06	Transparency in procurement process improved due to ERP system	20	15	65	4.45	4	4	0.805	Transparency Improved
Q-07	Supplier and service provider getting required information more quickly	10	5	85	4.75	5	5	0.622	Process Simplified
Q-08	End to end visibility in total procurement process improved by Using ERP system	10	10	80	4.70	5	5	0.640	Process Simplified
Q-09	Contract management is much easier in ERP and E-GPsystem	5	5	90	4.85	5	5	0.477	Process Simplified
Q=10	Overall Cost of Procurement Reduced	5	10	85	4.80	5	5	0.509	Cost reduced

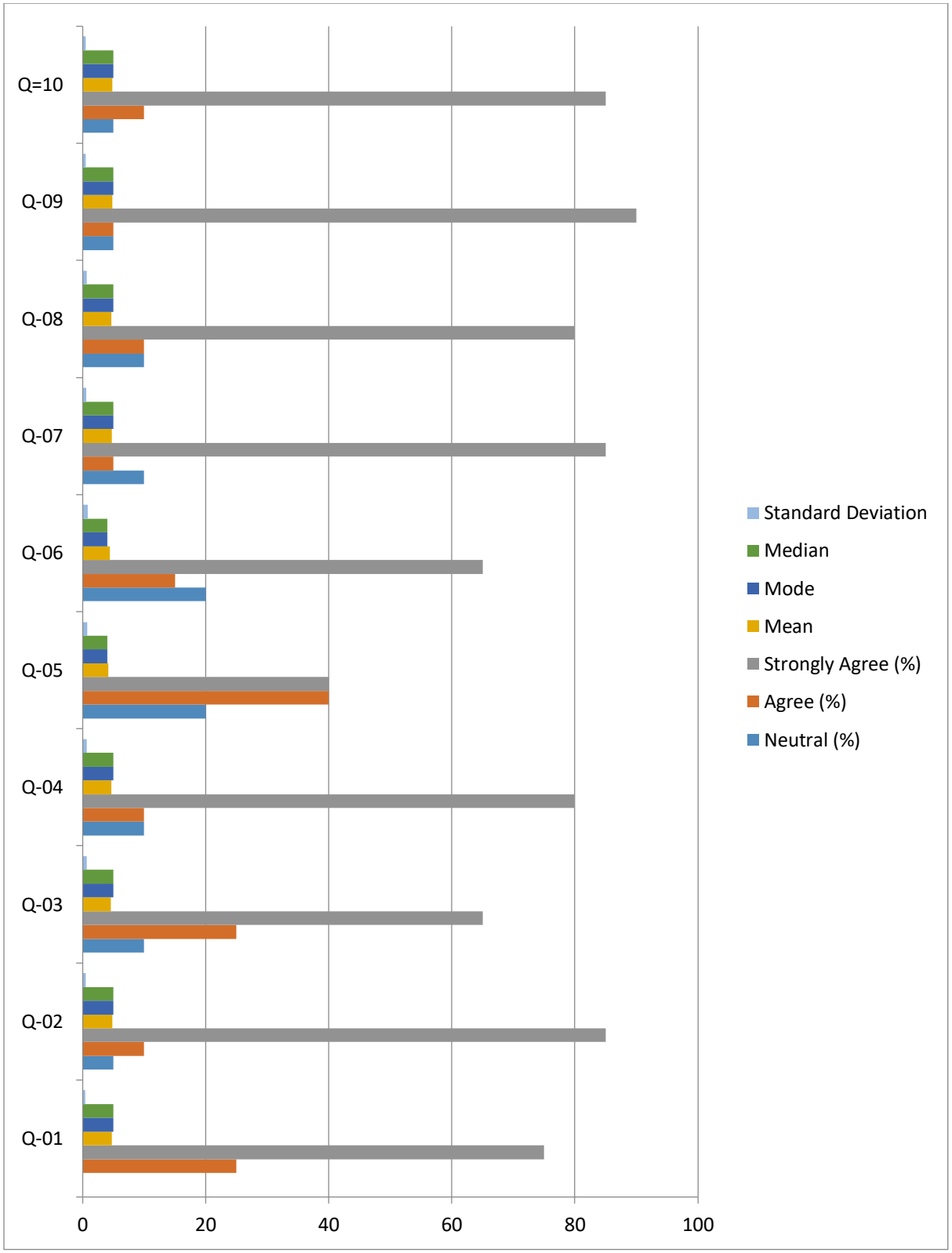

Chart 5: Overall Response Analysis

According to the primary statistics, **strongly agree** is the most common response in all ten questions. The measurement range is 4.2 to 4.5, with a highest standard deviation of 0.805. Respondents were unanimous in their favorable assessment of the transformation process. The procurement process has significantly improved in terms of **Time, Cost, Quality Process, Relationship and Transparency;** these are the key elements of any process transformation.

The most tendering (136 No's) were completed in the years 2021-22, according to secondary statistics. This is the highest number in the previous five fiscal years. It demonstrates that the procurement process has become less time demanding, as well as that the overall process has improved.

Furthermore, the organization has met the budget and bill payment capacity targets set by the Annual Performance Agreement since the introduction of ERP software with E-GPsystem..

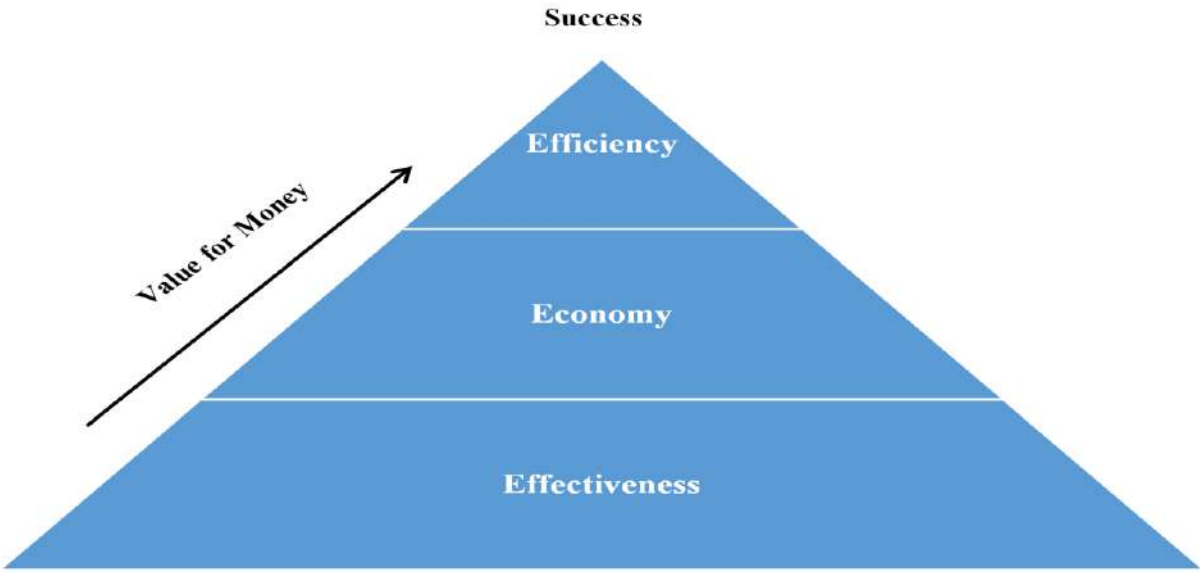

Figure 21: 3 E's of Value for Money

The transformation of the procurement process aided the organization's success. Value for money in each procurement ensured. Process effectiveness, economy, and efficiency are improved. **The ISO audit team accepts EGCB's procurement process and certifies it as a standard process transformation in accordance with worldwide benchmarks.**

Chapter 6

Conclusion and Recommendation

The study was conducted by collecting primary data from interviews as well as secondary data from the Annual performance analysis report, Annual report, and open sources.

We learned from the open-ended question that the procurement process efficiency within the company has significantly improved. Following the implementation of the ERP system, the total number of procurement increased significantly.

EGCB uses both an ERP and an e-GP system to complete their procurement procedure. With the digitization of the procurement process, efficient inventory management and critical sapres availability in power plants are now possible. Tenders on the e-GP website are accessible to anyone, and registered users can download and submit tender documents, whereas ERP use is restricted to internal business employees. Vendors, Consultant don't have access to this system. EGCB employees are solely responsible for the security of all information. Whole-life costing is a fundamental approach to sustainable procurement, and any resource's life cycle can be easily assessed in an ERP system.

Although EGCB uses the ERP system effectively in their organization, there is still room for improvement. The employees involved in the process require more information and data security training. As the whole procurement process becomes digital in the organization, the cyber threat will increase in the future. Organization need to implement policies for cyber security.

According to World Data, Bangladesh currently produces 113% of the required amount of electricity, which puts us close to being self-sufficient in this area. Sustainable procurements are required to keep this momentum going. Adoption of new technology, such as ERP software and electronic procurement, contributes to sustainable development.

References

[1] e-government procurement (e-GP) Portal, retrieved 2 March 2023, http://www.eprocure.gov.bd

[2] The World Bank(2002), Bangladesh Country Procurement Assessment Report, Report No. 24144-BD.

[3] Chartered Institute of Procurement and Supply (2012), Sustainability in supply chains, The Official CIPS Course Book, First edition, Profex Publishing Limited, UK, Dated: September, 2012

[4] Electricity Generation Company Bangladesh Limited- EGCB website , Background of EGCB Ltd, retrieved 2 January 2023, https://egcb.gov.bd/site/page/90943a2f-dd39-4f06-ace7-6c766c060f52/-

[5] Electricity Generation Company Bangladesh Limited- EGCB website , Publication and Reports, retrieved 2 January 2023, https://egcb.gov.bd/site/page/90943a2f-dd39-4f06-ace7-6c766c060f52/-

[6] Power Cell Bangladesh- website, Data Bank, http://www.powercell.gov.bd/

[7] Md. Moktar Hossain, " A study on Bangladesh Power Development Board on the basis of key performance indicator regarding compliance of PPR 2008 in the procurement activities in terms of Procurement processing time..," December, 2016, MPSM, BRAC University, Bangladesh.

[8] Delegation of financial power, Electricity Generation Company Bangladesh Limited, 2023.

[9] Sadat Bin Ashraf, Scope and Challenges of Introducing Sustainable Procurement in Power Grid Company of Bangladesh Ltd. (PGCB Ltd.), 2016, MPSM, BRAC

University, Bangladesh.

[10] Md. Tarik Chowdhury , Supply Chain Practices of FMCG Products:"A Study of New Zealand Dairy Products Bangladesh Ltd", 2016, MPSM , BRAC University, Bangladesh.

[11] Public Procurement Rules, (2008), People's Republic of Bangladesh.

[12] e-GPguideline (2011), People's Republic of Bangladesh.

[13] Procurement Policy (2015) of Electricity Generation Company Bangladesh Limited.

[14] SAP – ERP Software , https://www.sap.com/india/products/erp.html#customers

Appendix A: Survey Questioner

Study Topics: Transformation of procurement process through ERP and e-GPSystem in power plants.

1 Name of the respondent								
2 Designation								
3 Name of the Organization								
4 Relevancy with EGCB (please tick one)	Employee	TEC/TOC member	Suppliers	Others				
5 Educational qualification								
Training (please tick)	PPA 2006 & PPR 2008	SAP	Procurement & Supply Chain	Others				
Question No	**Question on Procurement Process transformation**	**Scale 1 to 5** Please circle (O) only one number that best reflects your opinion on the following 5 points scales						
Q-01	APP, Estimation Preparation and Approval time reduced due to ERP System and tendering in e-GPsystem	1	2	3	4	5	1= strongly disagree 2= disagree, 3= Neutral, 4= agree, 5= Strongly agree	
Q-02	Tender Document Processing Time reduced by using ERP & E-GPsystem	1	2	3	4	5		
Q-03	Quality of Supply and Service Obtained from different vendor improved.	1	2	3	4	5		
Q-04	Vendor Evaluation and performance analysis is much easier in ERP and E-GPsystem.	1	2	3	4	5		
Q-05	Relationship with stakeholders improved	1	2	3	4	5		
Q-06	Transparency in procurement process improved due to ERP system	1	2	3	4	5		
Q-07	Supplier and service provider getting required information more quickly	1	2	3	4	5		
Q-08	End to end visibility in total procurement process improved by Using ERP system	1	2	3	4	5		
Q-09	Contract management is much easier in ERP and E-GPsystem	1	2	3	4	5		
Q-10	Overall Cost of Procurement Reduced	1	2	3	4	5		

Appendix B: ISO Certificate (EGCB)

BUREAU VERITAS

Bureau Veritas Certification

ELECTRICITY GENERATION COMPANY OF BANGLADESH LIMITED

HEAD OFFICE: UNIQUE HEIGHTS (LEVEL-15,16), 117 KAZI NAZRUL ISLAM AVENUE, ESKATON GARDEN, DHAKA – 1217, BANGLADESH.

This is a multi-site certificate, additional site(s) are listed on the next page(s)

Bureau Veritas Certification Holding SAS – UK Branch certifies that the Management System of the above organisation has been audited and found to be in accordance with the requirements of the Management System Standards detailed below.

Standards

ISO 9001:2015, ISO 14001:2015 & ISO 45001:2018

Scope of certification

GENERATION AND SUPPLY OF POWER TO NATIONAL GRID AND ADMINISTRATIVE SUPPORT FOR HUMAN RESOURCES DEVELOPMENT, PROCUREMENT AND HEAD OFFICE ACTIVITIES.

Original cycle start date:	**13 March 2023**
Expiry date of previous cycle:	**Not Applicable**
Certification Audit date:	**10 November 2022**
Certification cycle start date:	**13 March 2023**

Subject to the continued satisfactory operation of the organisation's Management System, this certificate is valid until: **12 March 2026**

Certificate No. **IND.23.5058/IM/U** Version: **1** Issue date: **13 March 2023**

Signed on behalf of BVCH SAS UK Branch
Jagdheesh N. MANIAN
Director – CERTIFICATION, South Asia
Commodities, Industry & Facilities Division

UKAS MANAGEMENT SYSTEMS 0008

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Further clarifications regarding the scope of this certificate and the applicability of the management system requirements may be obtained by consulting the organisation.
To check this certificate validity please call + 88 (02) 8836765. OR E-mail: cert.india@bureauveritas.com