BANGLADESH E-GP: DATA ANALYTICS ON ELECTRONIC GOVERNMENT PROCUREMENT (E-GP) SYSTEM

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ABSTRACT: *The use and magnitude of Electronic Government Procurement (e-GP) System in Bangladesh is increasing day by day and gaining ground gradually. Since its inception in 2011 e-GP System has brought about a revolutionary change in the area of public procurement area in Bangladesh. It has a tremendous impact on the overall cost reduction of both the procuring entity (PE) and tenderer community. Application of data analytics shows that e-GP has made the use of e-GP easier and accessible to all. Both the PE and tenderers can generate different customized data and reports which facilitates the decision making process. Whole working cycle of procurement has been optimized with the use of e-GP. In short, introduction of e-GP has reduced procurement lead time, increased operational and process efficiency which ultimately contributes to achieve overall organizational efficiency, transparency, accountability and ensured value for money.*

KEYWORDS: e-GP, Tender, PROMIS, e-CMS, NTDB

INTRODUCTION

e- Government Procurement (e-GP) means carrying out all traditional tendering activities in an electronic form, using the Internet. The basic objective for e-tendering is to bring efficiency, effectiveness, security, authenticity and accountability into the tendering process. A national e-

Government Procurement (e-GP) portal (www.eprocure.gov.bd) of the Government of the People's Republic of Bangladesh is developed, owned and being operated by the Central Procurement Technical Unit (CPTU), Implementation Monitoring and Evaluation Division of Ministry of Planning with support from the World Bank. This initiative has brought a significant positive changes in the macro management of public procurement in Bangladesh and contributed towards the achievement of cost and process efficiency. The e-GP in Bangladesh has already tailored and rolled over other developing countries in the world. Through this paper the current status, use and application of e-GP with its impact as well as the areas of improvement will be explored.

Gap Analysis.

Since the inception of e-GP system in Bangladesh back in 2011 there have been significant qualitative and quantitative changes in the different key performance indicators (KPI) of public procurement management in Bangladesh. This contribution of e-GP system is supported by different research papers. However, almost there is little or no study as to the data analytics of e-GP system in Bangladesh through which current trend, scope and application together with its far reaching impact can be known. This void will be investigated with this paper highlighting room for enhancement of the current data analytics. The findings of the study will definitely minimize the debate regarding the acceptability of the current system and will certainly contribute to the domain knowledge of the system.

Dynamics of e-GP System in Bangladesh

The e-GP system is a single web portal from where and through which PAs and PEs are able to perform their procurement related activities from planning to contract management, using a dedicated secured web based dashboard. The whole operational cycle of e-GP system is presented below:
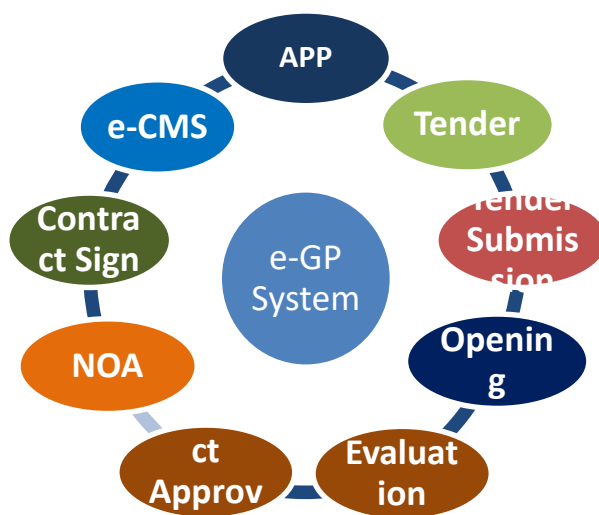

Figure-1: Working cycle in e-GP System

Working cycle of the e-GP system is basically based on the generic procurement cycle where procurement starts from the creation of annual procurement plan (APP). After creating APP, appropriate tender document is finalized based on the specific requirement of the procuring entity (PE). Having tenders from the tender a two member opening committee opened the tender electronically and forwarded the same to the chairperson of the tender evaluation committee (TEC) for evaluation. TEC determine the lowest responsive tenderer and gives recommendation for award of contract. Based on the recommendation of the TEC, a tender is approved by the competent approving authority and contract is signed with the recommended tenderer within a specific time limit.

Modus operandi of e-GP system in Bangladesh
Modus operandi of e-GP system in Bangladesh is outlined below:
Centralize Registration
The e-GP System support the following user categories for stakeholders/actors initially, and provides them the secured access to related functionalities of the e-GP system through their individual dashboards:

➢ Tenderers/Contractors/Applicants/Consultants
➢ Procuring Agencies/Entities
➢ Payment Service Providers (Scheduled banks and other payment service providers)
➢ Development Partners
➢ e-GP System Administrators (CPTU and PE administrators) and Auditors
➢ Operation & Maintenance partners
➢ Committees (opening/evaluation etc)
➢ Approval authorities
➢ General public for information related public procurement
➢ Media community for updates, announcements, news releases etc.
Annul Procurement Plan

For creating APP, Procuring Entity (PE) User performs three steps as follows:
➢ Create APP: PE User selects the Budget Type for which APP is being created. There are three types of budgets, namely, Development Budget, Revenue Budget and Own Fund. Only one APP will be created based on the financial year and budget type.
➢ Add Package Details: In this step, PE User can add the Package details such as package name, procurement nature, package description, estimated cost, contract approving authority, procurement type, procurement method etc.
➢ Add Package Dates: This is the last step of add package in an APP. In this step, PE User selects Expected Date of Advertisement of Tender on e-GP website and sets the time duration for Tender Submission, Tender Opening, Contract Award, Contract Signing and Contract Completion based on that Expected Date of Advertisement.
➢ After adding the APP Package, it needs to be approved by HOPE/AO (as applicable) for publishing in e-GP Portal, so that all stockholders can view the APP Package. PE can also be able to revise the package before creating the Tender.
e- Tendering

Procuring Entities themselves can publish their tender notice on e-GP website. To participate in e-Tendering published in e-GP system, the tenderers/applicants need to go through a registration process. Only after the successful registration process, a tenderer gets access to e-GP System Dashboard and e-GP functions for participating in e-Tendering. Stipulated fee for the tender document is paid by the tenderer/applicant through scheduled banks registered with e-GP portal to participate in the tender. Tenderers can download tender document prepared by the Procuring Entity (PE) free of cost from the e-GP System. Before preparation of tender, the tenderers must pay fees determined the Procuring Entity (if applicable) for the document through e-GP registered bank network. Fees can be paid through cash/Demand draft/Pay order and the bank updates the payment in e-GP System. Fees can also be paid through credit and debit cards. Tenderer submits Tender Security and Performance Security (in case of contract signing) to any of the branches of the bank registered with e-GP either in the form of Demand draft/Pay order/Bank guarantees. Then the bank branch updates the e-GP System with transaction details and keeps the instrument with them.

Collection of Fees

As e-GP system in Bangladesh is self-sufficient it generates huge revenue for government. Tenderers and other beneficiary of the system have pay through the system via 47 registered banks in Bangladesh. Registered banks collect registration fees, tender document fees, tender security fees, performance security fees, new- performance security fees, and complaint fees. Collection of different fees under e-GP system is depicted in the figure 2:

Figure-2: e-GP collection fees gateway

This figure shows the interaction of different banking agents/branches and depicts the payment gateway. Through this gateway, any interested tenderer can make payment which is deposited against the designated account of the CPTU.

e-Submission

Tender submitted by the tenderer is stored in e-GP database in encrypted format. Only the tender opening committee can get access to tender and identification of tenderers only after the specified opening time. Before opening of the tender the opening committee members/ procuring entity/ e-GP administrator or tenderers or any other user cannot know the identity of the participating tenderers and the content of the submitted tenders.

e-Signature
All types of users at the first instance (except general website visitor) use their e-mail ID as user name and the secret password. This password is converted into irreversible Hash value (combination of alphabet and numbers generated through mathematical formula). Password is not stored in the e-GP database, only the Hash value is stored. As the Hash value is irreversible, password cannot be regenerated from stored Hash value. In case of submission of filled up forms in e-GP System, information of the filled up form in combination of the password Hash value is equivalent to putting the signature of the tenderer.

Pre-Tender Meeting
Responses/clarifications of the queries relating to the tender is posted by tenderers via e-GP online channel through Dashboard during pre-tender meeting. Queries posted via Fax/Post/Email are not entertained. Pre-tender meeting is held online and answer to the queries of the tenderers and also available only in tender dashboard of the tenderers who purchased the documents for specific tender. Name of the tenderers who participated in the electronic pre-tender meeting is not shared with tenderers and procuring entities.

Tender Opening
Opening committee members login to the e-GP System only after the schedule time of opening get the option of opening the tender. e-GP System generates opening report automatically in approved tabular format detailing the name, address, contact details, quoted price, currency and information about tender withdrawals, substitution and modification, if any. Participating tenderers get access to the opening report instantly after the closing of the opening process in e-GP System. Tender Opening committee chairperson forwards the Tender Opening reports with their comments, if any, to the Procuring Entity.

Tender Evaluation
Evaluation Committee members get access to e-GP tenders, only at the time when Procuring Entity forward it to them. The e-GP system generates the comparison matrix of all the tenders for the evaluation Committee. Evaluation Committee chairperson finalizes responsiveness and prepares evaluation report. All members of the committee sign the technical reports and then financial report is generated by the e-GP System. After post qualification of the lowest evaluated responsive tenderer the evaluation committee signs the financial reports and forwards the evaluation report electronically to the appropriate authority through the work flow set by the PE as per delegation of financial power in the e-GP system for the particular tender.

Tender Approval Process

Having received the evaluation report through the work flow set for the particular tender the approval authority may approve or seek clarification from the evaluation committee or mentioning the reason instruct to re-evaluate the tenders or reject the tender to reprocess. If approved, PE issues the system generated Notification of Award (NOA) to the winning tenderer. The winning tenderer accept or declined NOA through e-GP system.

Notification of Awards

After completing the evaluation, Contract Approving Authority approves the contract through workflow in e-GP System. Then, PE User will be able to issue the NOA in e-GP System with mentioning the Contract number where system will generate a complete NOA document that contains the following:

➢ Deadline (within seven working days of its issuance) to accept the NOA
➢ Performance Security Amount and deadline (within fourteen days of NOA issuance) to submit the Performance Security
➢ Deadline (within twenty eight days of NOA issuance) to sign the contract
➢ Tenderer bank account information
➢ Name of the document that form the integral part of the contract
➢ Contract document
➢ General Conditions of Contract
➢ Priced Bill of Quantity
➢ Tender Document

Contract Signing

Accepting NOA the winning tenderer submit performance security to the registered bank and meet with the procuring entity for the first time in e-GP tendering process to sign the contract. Before signing ceremony tenderer don't need to communicate physically with the PE to participate in the e-tender. After signing the contract PE uploads the scan copy of the signed contract in e-GP system and contract information is published automatically to the e-GP system.

e- CMS

Electronic contract management system (e-CMS) is now being piloted in e-GP. The piloting has started with 3 contracts of LGED and 2 contracts of RHD. After successful piloting, CPTU plans to roll out e-CMS across all procuring agencies.
Electronic Procurement Management Information System (e- PROMIS)
Based on the 42 indicators the performance of the PEs is measured in e-GP system. As the complete processing of the tenders is done through e-GP system the performance report of the PEs is generated automatically from the e-GP system which is accessible to PEs, the senior officials of the agencies. CPTU can also generate the performance report nationwide through the e-GP system with a single click.

National Tenderers Database (NTDB)

A national tenderers database has been developed by CPTU. It is made for tracking tenderers Work Experiences and Annual Contraction Turn Over, Liquid Asset, Employees History and many more.

It is expected to streamline the procurement process in the country. Procuring Entity (Buyer) can be easily identified more expertise Tenderers by using this module.

Citizen Portal
Citizen can monitor the Public Procurement in any country through Citizen Portal. A citizen portal is launched procurement related data for all concerned has been launched by CPTU. It is available on the web at citizen.cptu.gov.bd

Public Procurement Mobile App
A mobile app to view e-GP and offline notices is in place. Tenderers and PEs can also call 16575 from the app to get e-GP Help Desk related support. It is available in both ios and android versions.

Helpdesk Support (24/7)
24x7 help desk support though out the year is available to address users' complaints and queries on technical issues by means of dedicated short-code (16575), hotline, emails, online chatting and physical support if required. This Helpdesk system keeps track of entire life cycle of all the tickets raised by end users starting from its generation to closure. Depending on the severity of the complaints, it's being addressed by the dedicated professionals at different level and within stipulated deadline.

Current performance status of e-GP system in Bangladesh
Since 2011 Bangladesh has achieved a significant development in the field of public private management in Bangladesh. A big picture of the aspects of e-GP developments is given below:

Figure 3: Progress of e-GP System till 31st August 2020
Latest data on e-GP states that as on 31 August 2020, a number of 1343 agencies are registered under 9267 PEs, registered number of tenderer is 74749 and a number of 4,01,844 tenders are

invited through the system. On the other hand a total number of 2, 55,486 contracts have been awarded having contract value equivalent to USD 25.24 billion.

Analysis of public procurement data in Bangladesh

Public procurement data in Bangladesh is analyzed below:

Use of PROMIS

A clear picture of comparative of public procurement data in Bangladesh from back in 2007 to 2020 is presented below:
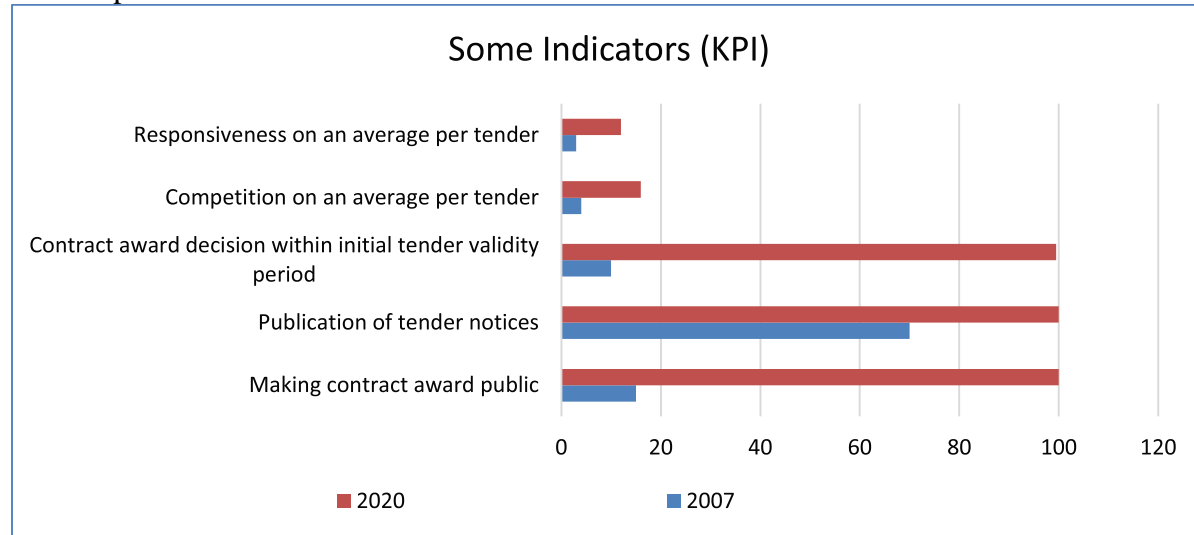

Figure 4: Comparison of Some PROMIS Indicators result in 2011 before e-GP and 2020 after e-GP

The figure indicates that after introduction of e-GP system, 100% contract are published in public domain, 100% contract are awarded within initial tender validity period. The data is derived from PROMIS.

Use of APP

APP published in e-GP System Top Ten (10) District (State) wise by implementing data analytics which is depicted in the below scattered diagram 1:
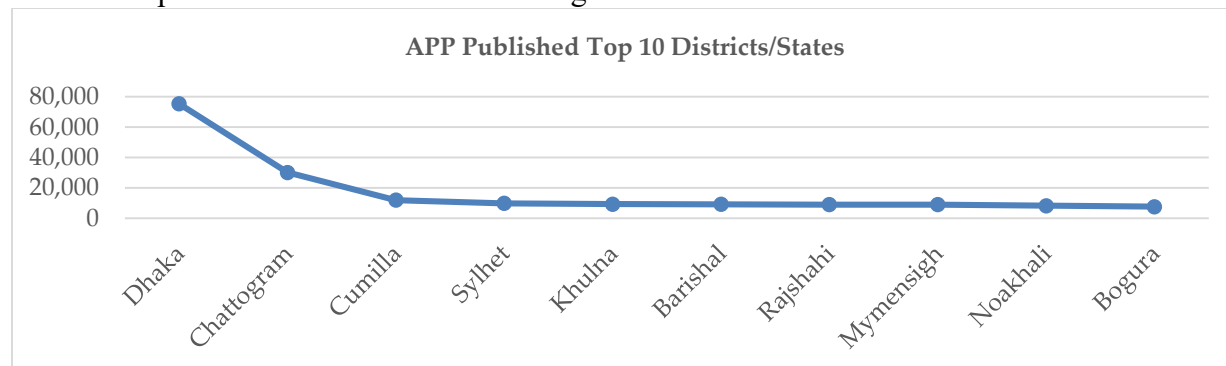

Diagram1: APP published Top 10 (Ten) district/states in e-GP System

Highest APP is published in Dhaka District where Tenderer can analyze that they need to more focus to Dhaka district regarding APP and other Nine (9) districts are also mentioned into *Diagram*

1. So based on that Tenderer can take decision where he needs to more focus. APP Published in e-GP System financial year wise by implementing data analytics which is depicted in the below scattered *diagram 2*:
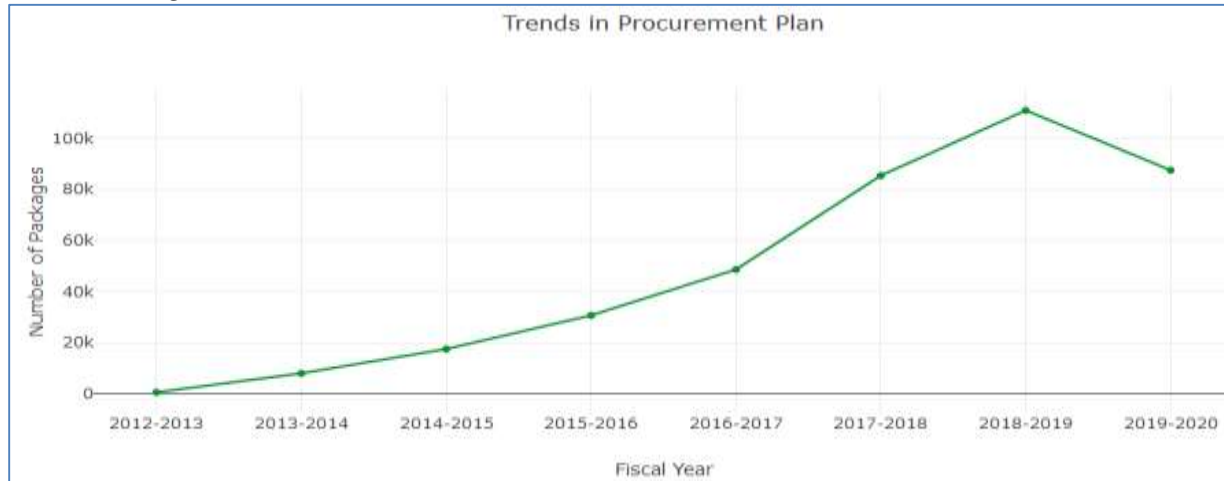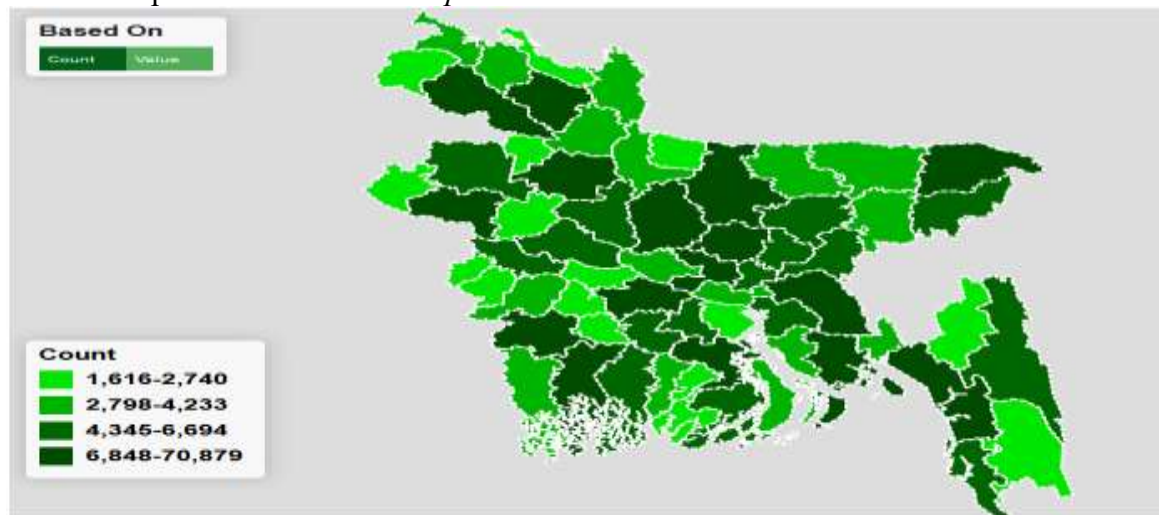

Diagram 2: APP published financial year wise in e-GP System

APP is published based on financial year since '2012-2013' to '2019-2020' where stakeholders can analyze that how many APP is published in which financial year that is mentioned in *Diagram 2* so that stakeholder can generate different reports for taking decision. Government of Bangladesh can also summarize and make decision for APP of next financial year.

Use of Tender

Tender published in e-GP System based on District (State) wise by implementing data analytics which is depicted in the below *Map 1:*

Map 1: Tender published in e-GP System district (State) wise into Bangladesh Map

Tender is published based on Geographical Location which is shown in *Map 1 which shows apen picture of e-GP concentration in Bangladesh.* Tenders published in e-GP System based on financial year by implementing data analytics which is depicted in the below scattered *Diagram 3*:

Diagram 3: Financial Year wise Tender published in e-GP System

Tender is published based on financial year since '2012-2013' to '2019-2020' where stakeholder can analyze that how many Tender is published in which financial year which is mentioned in *Diagram 3* so that stakeholder can generate different reports for making decision. Government of Bangladesh can also summarize and make highest decision regarding public procurement of Bangladesh. Tender published in e-GP System based on top ten (10) Districts (States) wise by implementing data analytics is depicted in the below scattered *Diagram 4*:
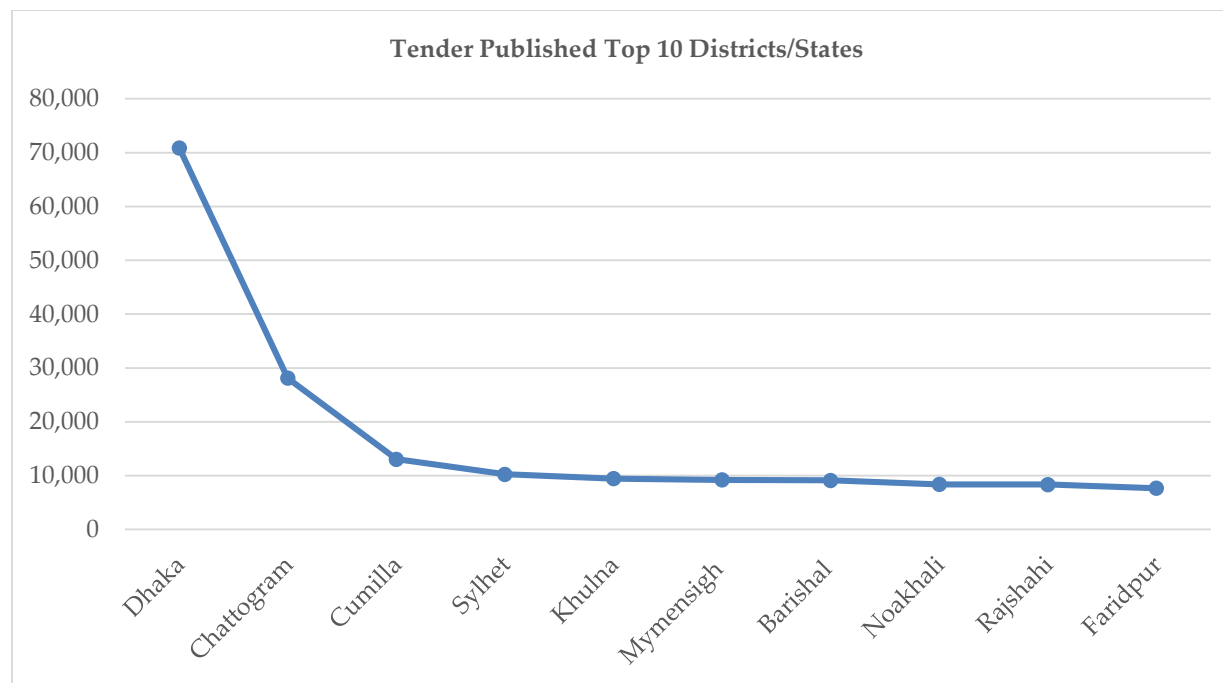

Diagram 4: Tender published Top 10 (Ten) district/states in e-GP System.

The above diagram shows that highest number of tenders is published in Dhaka district while Faridpur district is lagging behind. This sort of information facilitates the potential tenderers to redirect their strategic business plan.

Use of Contract Award

District wise information relating to award of contract is presented in below map:
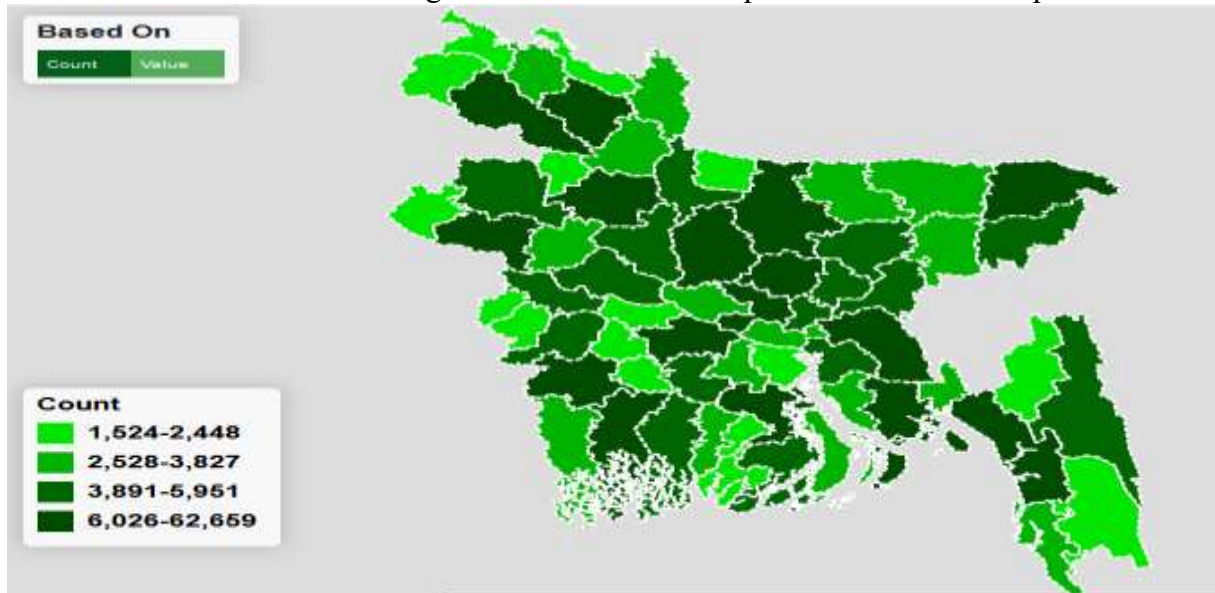
Map 2: District (State) wise Contract Awarded in e-GP System

The above map indicates number of contracts awarded based on geographical which help the tenderer and PEs to redirect the focus of equal participation in the e-GP system. Contract awarded in e-GP System is presented based on financial year is depicted in the below scattered *Diagram 5*:
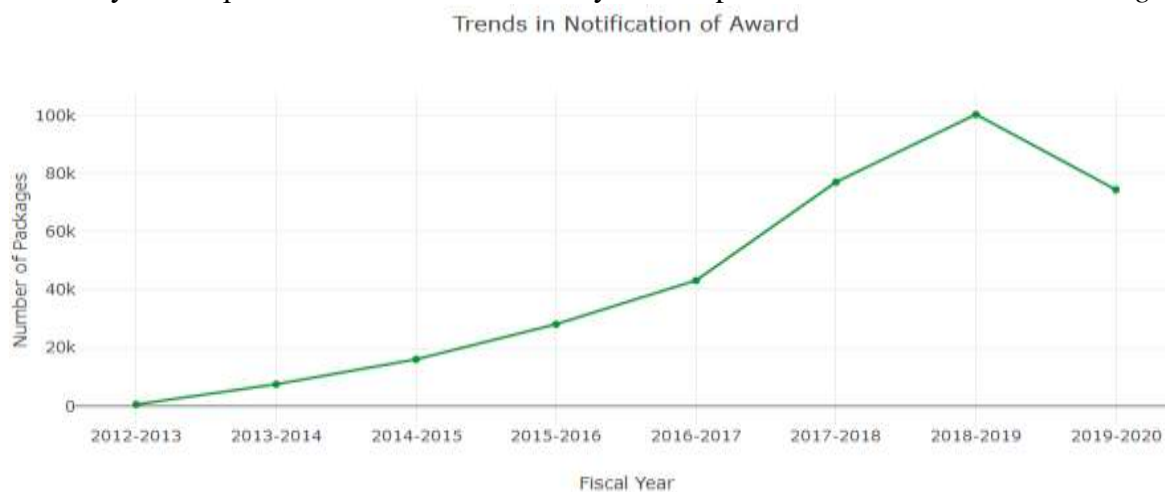

Diagram 5: Financial Year wise Contract Awarded in e-GP System

Contract information based on financial year since '2012-2013' to '2019-2020' show that in the financial year 2018-19 maximum number of notification of award has been issued where this number was minimum in the financial year 2012-13. Performance of top ten districts in terms of contract award s presented in the below scattered diagram:
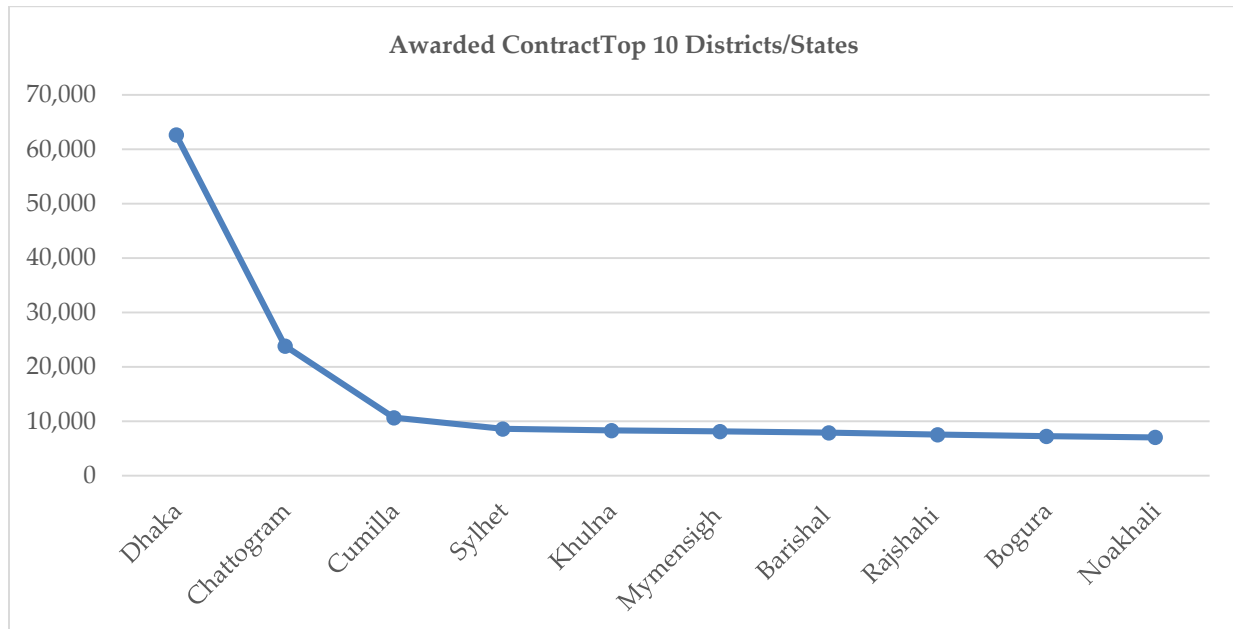
Awarded ContractTop 10 Districts/States

Diagram 6: Awarded of Contract to top 10 (Ten) district/states in e-GP System

The above diagram shows that highest number of contracts are awarded in Dhaka district (state) while Noakhali district (state) becomes the lowest. This sort of information will go a long away to take strategic decision regarding e-GP system in Bangladesh.

Analysis and findings
This paper explores the mode of operation, modus operandi and analysis of e-GP system in Bangladesh using data analytics. Major findings of the study are presented below:
Improvement of monitoring compliance of procurement law
e-GP System has been developed based on Bangladesh Public Procurement Act (PPA) and Public Procurement Rules (PPR). Data analytics have been performed on e-GP System based on PPA and PPR so monitoring have been complied on e-GP System.

Measuring performance of the PEs (Buyer)
PEs has to follow the business rule engine which is configured by e-GP Administrator. Based on Business rule, e-GP System has been working. So performance of PE can be easily measured.
Measuring performance of the Tenderers (Buyer)
Tenderer has to follow the configuration matrix regarding Milestone and activity otherwise he cannot do anything. So performance of Tenderer can be also easily measured.

Improvement Spend Analysis
e-GP system in Bangladesh provides a clear demonstration of the actual performance of the work performed under each contract which helps the PE and tenderer to analyze, trace and track every cost center. This will also help both the PE and tenderer to monitor actual spending of the organization which will ultimately leads towards the improvement of the spending analysis.
Detection of fraudulent and collusive practice

As e-GP system is integrated with the multi-layer security system any kind of fraudulent, collusive and coercive practices can easily be identified and detected and instant security measures can be taken to address against those malpractices.

Improvement of transparency in public procurement
All the activities undertaken under e-GP system is based on the real time cloud computing system and there is no scope for making any gain. The workflow and the decision loop is clearly pre-defined and encrypted which ensures the transparency in the public procurement practices in Bangladesh.

Improvement of best value for money
Using e-GP system PEs and tenders are saving billions of dollars as this system reduces the use of paper, reduces procurement lead time, reduces procurement processing time, reducing scope for corruption and increasing accountability and transparency. Above all, this self-sustaining system is generating a significant amount of non-tax revenue and enriching the government exchequer.

CONCLUSION AND RECOMMENDATIONS

Bangladesh is well advanced in south Asian countries in implementing e-GP. In Europe, Portugal is a pioneer though it covers 70% of the public procurement. Bangladesh, comparatively, advances in many aspects, mainly in performance measurement and contract management. It is also free from papers at all stages. Through this paper it is revealed that current system has brought about a paradigm shift in the arena of public procurement management in Bangladesh contributing towards improved economy, efficiency and effectiveness. Despite, existing e-GP system can be enhanced by adopting following measures:

- Development of Framework Agreement,
- Introduction of e-catalogue, e-auction and reverse auction,
- Development of performance appraisal and rating system for the contractors, suppliers and consultants,
- Incorporation of Open Contracting Data System (OCDS) in the e-GP system,
- Development of e-GP System Interfaces with Other Government Services,
- Development of Red Flag Monitoring and Reporting Tool,
- Develop and Enhance the Audit Module of the e-GP system,
- Development of Dashboard for Procurement Post Reviews and for Audit.

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