A Study on the Implementation of Electronic Government Procurement (e-GP) in Bangladesh Bureau of Statistics (BBS): Impact on Present Procurement Practices and Future Scopes

Submitted by

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A thesis submitted to the BRAC Institute of Governance and Development
in partial fulfilment of the requirements for the degree of
Masters in Procurement and Supply Management

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Declaration

It is hereby declared that.

1. The thesis submitted is my own original work while completing degree at BRAC University.
2. The thesis 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 thesis 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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Approval

The thesis titled "A Study on the Implementation of Electronic Government Procurement (e-GP) in Bangladesh Bureau of Statistics (BBS): Impact on Present Procurement Practices and Future Scopes." submitted by

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of Summer, 2023 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of Masters in Procurement and Supply Chain Management (MPSM) on 07.03.2024.

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Ethics Statement

This thesis adheres to ethical standards for research. Informed consent was obtained from all participants. They were fully briefed on the nature of the study, assured of anonymity and confidentiality, and informed of their right to withdraw at any time. Identifying details have been removed from quotes and examples used in this thesis.

Care has been taken to ensure the accuracy and integrity of all data reported. Methods for data collection and analysis are outlined in detail to allow for scrutiny and reproducibility. Any potential conflicts of interest have been disclosed.

This thesis contains no plagiarism. All sources have been appropriately referenced and acknowledged. This thesis has not been submitted to any other institute or university for examination.

I declare this is a true and accurate account of the research performed.

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Abstract

This thesis investigates the effects of implementing Electronic Government Procurement (e-GP) on the procurement practices at Bangladesh Bureau of Statistics (BBS). A mixed methods approach combining interviews, surveys and quantitative analysis of process data is utilized. The study finds e-GP adoption has significantly enhanced efficiency, transparency, competitiveness, and overall procurement efficacy at BBS. Average tender cycle time reduced by 7 days and costs lowered by BDT 13 lakhs, representing major quantitative gains. Over 70% of staff acknowledged benefits like increased transparency, times savings, faster completion, expanded competition and lowered administrative burdens. However, barriers like inadequate skills, training gaps and inability to apply e-GP for service procurement persist, inhibiting optimal utilization. Addressing these via capability enhancement programs, mandatory e-GP policies and continuous system refinements can help consolidate the gains. Overall, the research validates existing theoretical conceptions on the transformational potential of technology-led procurement reforms and localizes these to the understudied context of statistical agencies in developing countries.

Keywords: e-Government Procurement (e-GP), Public Procurement, transparency, efficiency, automation, public administration reforms, Bangladesh.

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List of Acronyms

BBS	*Bangladesh Bureau of Statistics*
BWDB	*Bangladesh Water Development Board*
CPTU	*Central Procurement Technical Unit*
e-GP	*Electronic Government Procurement*
GDP	*Gross Domestic Product*
KII	*Key Informant Interview*
LGED	*Local Government Engineering Department*
NSO	*National Statistical Organization*
OECD	*Organization for Economic Co-operation and Development*
PE	*Procuring Entity*
PWD	*Public Works Department*
RHD	*Roads and Highways Department*
REB	*Rural Electrification Board*

Chapter 1: Introduction

1.1 Background

Electronic Government Procurement (e-GP) marks a significant advancement in public procurement, utilizing information and communications technology, particularly the internet, to streamline the acquisition process (Aman & Kasimin, 2011). Globally, countries have embraced e-GP systems and associated reforms to enhance transparency, efficiency, competitiveness, and the overall value for money in public spending.

In Bangladesh, a substantial shift in procurement practices occurred with the introduction of procurement reforms and e-GP under the Public Procurement Act 2006 and the Public Procurement Rules 2008. This comprehensive reform initiative was part of the broader Public Procurement Reform Project, collaboratively supported by esteemed development partners such as the World Bank (Damsgaard & Somasundaram, n.d.). This reform aimed to modernize procurement practices, aligning them with international standards.

Central to this transformation was the establishment of a centralized e-Government Procurement system, commonly known as e-GP. The implementation began with a pilot phase in key government agencies. The overarching objective was to create a unified nationwide web portal, embodying a sophisticated, secured web-based online system designed to automate the entire government procurement process. This shift aimed to reduce reliance on paper-based manual systems, ushering in an era where crucial stages of the tendering process are seamlessly executed in the digital realm (Hossain, 2022).

This digital transformation has profound implications for the efficiency and efficacy of government procurement. Serving as a

single-point online platform, e-GP optimizes processes, reduces bureaucratic bottlenecks, and enhances the overall agility of procurement activities. Moreover, it aligns with the global trend of leveraging technology to bring positive transformations in public administration.

The adoption of e-GP in Bangladesh represents a strategic response to the evolving demands of a modern and interconnected world. It reflects a commitment to embracing technological solutions to keep pace with international standards and catalyze advancements in transparency, efficiency, and competitiveness within the realm of public procurement.

1.2 Overview of Bangladesh Bureau of Statistics (BBS)

Statistics are of immense importance in proper planning, development, and progress monitoring of the country. Proper planning is a prerequisite for development. Conclusive, timely and standardized Statistics are required for proper development planning. Bangladesh Bureau of Statistics (BBS) prepares and publishes official statistics as a national statistical agency of the country.

The Bangladesh Bureau of Statistics has been in existence for more than 49 years, being formed from the merger of four other agencies in 1974. Since its inception, its role has been to provide the Government of the day and the nation with statistical information to guide decision making and the development process.

BBS conducts various censuses and surveys throughout the year to produce official statistics. BBS must regularly purchase census and survey materials, consultancy services, physical services etc. for conducting the said census and survey. Therefore, even if there are no regular huge amount purchases like Local Government Engineering Department (LGED), Public Works Department (PWD) in the procurement process, a significance procurement should be done every year with various projects and revenue sectors in BBS.

As all budgets are public money, BBS is determined to convert manual procurement process to e-procurement to ensure maximum utilization of public money in an efficient and transparent way. That is where Electronic Government Procurement (e-GP) comes into play. With e-GP, BBS can process all goods and works procurement which will reduce so many burdens for each procuring entity. Although operational budget and all development budgets are using e-GP along with manual procurement process in BBS since 2015, now it is high time to adopt e-GP everywhere in case of goods and works comparing advantages of e-GP over manual procurement process. This way, BBS can make the best use of the things they purchase and help the country to move forward.

1.3 Rationale for the Study

Understanding the vast potential of e-GP in improving transparency and efficiency, it becomes crucial to explore its implementation within public sector entities such as the Bangladesh Bureau of Statistics (BBS), which heavily relies on procurement due it is various surveys and censuses. As a vital national agency, gaining insights into BBS's adoption of the e-GP system involves comprehending the entire process, evaluating outcomes, identifying benefits, and addressing challenges. The findings derived from this study can play a pivotal role in guiding decision-makers toward enhancing BBS's procurement practices. By maximizing the use of technologies like e-GP tool, the study aims to contribute to the improvement of BBS's overall functioning. Furthermore, the outcomes can serve as a valuable reference for shaping policy directives, especially for other agencies contemplating the implementation of e-GP, ensuring that decisions are well-informed and evidence-based.

1.4 Significance of the Study

The significance of this study extends beyond BBS, particularly in addressing notable gaps in academic literature related to e-GP implementation in National Statistical Organization (NSO). The limited availability of comprehensive insights into e-GP experiences within such specialized public agencies creates a knowledge void. By documenting and analyzing the experiences from BBS's perspective, this study endeavors to fill these gaps. It sets the contextual foundation for understanding how e-GP can be applied in specialized public agencies with unique procurement needs. The significance lies in contributing not only to the improvement of BBS's practices but also in advancing the broader understanding of e-GP implementation in specialized sectors, paving the way for informed decision-making and policy development.

1.5 Research Questions

The study aims to answer the following research questions:

1. How has e-GP implementation transformed procurement processes within BBS?
2. What are the benefits experienced and challenges faced by BBS during e-GP adoption?
3. How efficient and transparent is the e-GP system compared to earlier manual processes?
4. What recommendations can be provided to BBS for further improvement based on findings?

1.6 Research Objectives

The main objectives of this study are as follows:

1.6.1 General Objectives

Investigate the effects of e-GP implementation on procurement practices in the Bangladesh Bureau of Statistics (BBS).

1.6.2 Specific Objectives

1. Explore the status of the current procurement practices within BBS.
2. Measure the cost effectiveness and timeliness for e-GP's implementation in BBS.
3. Identify the challenges and barriers to implement e-GP in BBS.
4. Identify and explore potential future applications and opportunities for e-GP within BBS

Chapter 2: Literature Review

2.1 Concept of Public Procurement

Public procurement stands as a cornerstone in the governance framework, embodying a comprehensive and systematic approach through which public sector entities acquire goods, services, and works to fulfill organizational needs and facilitate the delivery of essential public services (Aman & Kasimin, 2011; Schapper et al., 2006; Uyarra & Flanagan, 2010). The intricacies of public procurement extend far beyond mere transactions, weaving a complex tapestry that influences economic development, societal well-being, and the overall functioning of governments.

In the realm of public procurement, accountability, transparency, and efficiency emerge as fundamental principles, shaping the very foundation of this multifaceted process (Ambekar et al., 2015; Demessie, 2012; Snider & Rendon, 2008). As elucidated by (Vaidya et al., 2006), public procurement is not merely a bureaucratic exercise but a dynamic instrument through which governments actively contribute to the socio-economic development of their jurisdictions. It goes beyond the immediate acquisition of goods and services, encapsulating a strategic alignment with broader societal goals.(Leipold et al., 2004; Rendon, 2008)

The economic significance of public procurement reverberates globally, with empirical studies highlighting its substantial contribution to the Gross Domestic Product (GDP) of countries. (Kaliannan, Halimah, et al., 2009) underscore this point, emphasizing that public procurement, on average, accounts for 13% of GDP across OECD countries. This economic footprint underscores the pivotal role of public procurement in national fiscal affairs, making it a key driver of economic growth and stability.

The dynamic nature of public procurement is not confined to economic considerations alone. It is an integral component of good governance practices, where governments actively evolve and adapt procurement processes to ensure they align with changing societal needs and technological advancements. The work of (Snider & Rendon, 2012) emphasizes that public procurement, when guided by principles of good governance, becomes a strategic mechanism for achieving transparency, fairness, and equity in the allocation of public resources.

Public procurement is a dynamic and multifaceted domain that transcends its transactional nature. It embodies the principles of good governance and serves as a vehicle through which governments pursue economic development, societal well-being, and the effective delivery of public services. The robust foundation of accountability, transparency, and efficiency, as highlighted by (Snider

& Rendon, 2012), underscores the transformative role of public procurement in the broader governance framework.

2.2 Overview of e-Procurement and e-GP Globally

The landscape of procurement has undergone a profound transformation globally with the integration of electronic procurement (e-procurement) systems, heralding an era of enhanced efficiency, transparency, and accountability in the acquisition of goods and services by both public and private sectors. This paradigm shift towards e-procurement is not merely a technological evolution but a strategic response to the complexities of modern governance and business operations (Teo et al., 2009; Vaidya et al., 2006).

2.2.1 e-Procurement as a Global Phenomenon

Across the globe, the adoption of e-procurement systems has gained momentum, representing a strategic alignment with technological advancements and the imperatives of the digital age (Nziku, n.d.; Vaidya et al., 2004). The work of (Kaliannan, Awang, et al., 2009) underscores the global relevance of e-procurement, emphasizing its role in streamlining internal and external operations, providing real-time responses to market conditions, and enabling joint demand planning. The multifaceted advantages of e-procurement extend beyond cost savings, encompassing reduced administrative burdens, enhanced vendor management, and cycle time reduction (Arzu Akyuz & Rehan, 2009; McCue & Roman, 2012).

As highlighted by (Thompson et al., 2009), the global adoption of e-Government procurement (e-GP) is emblematic of governments leveraging technological tools to automate and enhance various phases of the procurement process. Countries such as Bahrain, Norway, Italy, Singapore, Turkey, India, and Malaysia have demonstrated the efficacy of e-procurement technologies in fostering competition among bidders, increasing procurement efficiency, and expanding global reach among suppliers (GeBIZ: Government e-Procurement System in Singapore | Centre for Public Impact (CPI), n.d.).

2.2.2 Challenges in the Global Implementation of e-GP

However, the global landscape of e-procurement is not devoid of challenges. Issues of end-user resistance, technological capability among suppliers, and internal organizational barriers have been identified as hurdles in the smooth implementation of e-procurement initiatives (Cole et al., 2017; Hawking et al., 2004; Kaliannan, Awang, et al., 2009; Mohungoo et al., 2020). The study by (Vaidya et al., 2004) emphasizes that successful e-procurement implementation requires

organizational and management flexibility, with the ability to learn and adapt to new systems and technologies.

The global experience with e-GP implementation highlights the importance of addressing challenges related to system integration, standardization, and supplier preparation (Angeles & Nath, 2007; Kaliannan, Awang, et al., 2009). It is evident that while e-procurement presents a transformative potential for procurement practices globally, its successful implementation necessitates navigating through various technological, organizational, and human factors.

In conclusion, the overview of e-procurement and e-GP globally reveals a landscape marked by both transformative potential and inherent challenges. The adoption of e-procurement systems on a global scale signifies a strategic response to the imperatives of the digital age, promising enhanced efficiency and transparency in procurement processes.(Shakya, 2017) However, the journey towards realizing the full benefits of e-GP necessitates a nuanced understanding of the challenges and a proactive approach in addressing them.

2.3 Public Procurement Reforms and e-GP Implementation in Bangladesh

2.3.1 Evolution of Public Procurement in Bangladesh

Bangladesh, like many other countries, has witnessed a significant evolution in its public procurement landscape, marked by strategic reforms and the integration of electronic government procurement (e-GP) systems. The Public Procurement Act and Rules introduced by the government marked a pivotal moment in the reform trajectory, emphasizing transparency, fairness, and efficiency in the allocation of public resources (*Document of the World Bank*, 2017; *Public Procurement Transformation in Bangladesh | World Bank - New Procurement Framework*, n.d.).

The study by (Huda, 2015) highlights the impact of e-GP in Bangladesh, underscoring its role in improving efficiency, fairness, and transparency in procurement processes. As governments globally respond to the imperatives of the digital age, Bangladesh embraced e-GP to align its procurement practices with technological advancements (Al-Hossienie & Barua, 2013; Bhuiyan, 2011).

2.3.2 Challenges in Implementing e-GP in Bangladesh

The implementation of e-GP in Bangladesh, however, has not been without challenges. Issues of inadequate resources, insufficient infrastructure, and a lack of technological expertise have been identified as hindrances to the widespread adoption of e-GP (Al-Hossienie & Barua, 2013; Bhuiyan, 2011). The unique nature of the work undertaken by the Public Works Department (PWD) presents challenges in fully integrating e-GP into all procurement activities (Hasan, 2016).

In the initiation phase, resistance from officials and contractors was observed, highlighting the difficulty in adapting to a completely changed system (Hasan, 2016). Despite the successful completion of 116 tenders by PWD under the e-GP system until June 2016, there is recognition that further improvements are needed to address challenges and enhance the overall procurement practices within the organization (Hasan, n.d.).

2.3.3 Government Initiatives and Citizen Engagement

The government of Bangladesh, cognizant of the transformative potential of e-GP, has undertaken initiatives to combat corruption and promote efficiency in the public sector procurement process (*Document of the World Bank*, 2017). The introduction of citizen engagement programs further enhances transparency and competitiveness in the procurement landscape (*Public Procurement Transformation in Bangladesh | World Bank - New Procurement Framework*, n.d.).

2.3.4 Insights from Global Experience

The experience of Bangladesh in implementing e-GP aligns with global trends, where e-procurement systems have become instrumental in shaping modern governance practices (Teo et al., 2009; Vaidya et al., 2004). The challenges faced in Bangladesh are reflective of the broader global context, emphasizing the need for comprehensive strategies to address technological, organizational, and human factors in e-GP implementation (Cole et al., 2017; Hawking et al., 2004; Kaliannan, Halimah, et al., 2009; Mohungoo et al., 2020).

In short, the journey of public procurement reforms and e-GP implementation in Bangladesh reflects a commitment to embracing technological advancements for improved governance. While challenges exist, the government's initiatives and global experiences provide valuable insights for further refining procurement practices, ensuring that e-GP becomes a cornerstone of efficient, transparent, and accountable public procurement in Bangladesh.

2.4 Benefits and Challenges of e-GP Implementation

2.4.1 Benefits of e-GP Implementation

The implementation of e-GP systems brings forth a myriad of benefits that span efficiency, transparency, competitiveness, and integrity in public procurement processes. As evidenced by (Teo et al., 2009), one of the major efficiency gains is the reduction of administrative costs and time savings. The automation of manual tasks related to document exchange, evaluation, and payment contributes to a streamlined and more efficient procurement workflow.

Expanding accessibility to a wider bidder base is a key advantage highlighted by (Kaliannan, Halimah, et al., 2009), fostering increased competition, better prices, and overall value for money. This aligns with the findings of (Vaidya et al., 2006), who emphasize that e-GP adoption leads to significant improvements in efficiency, transparency, and competitiveness. The availability of centralized procurement data enhances monitoring, planning, and strategic decision-making capabilities (Vaidya et al., 2006).

Enhanced transparency and accountability emerge as critical benefits of e-GP implementation. The online portals providing access to tender information and documentation shrink avenues for arbitrary actions and attitudes, fostering inefficient expenditures or corrupt practices (Wu & Group, 2021). This increased visibility builds stakeholder trust and credibility in governance systems.

Moreover, e-GP systems allow for greater control over maverick spending, better supply chain management, leaner inventory levels, and reduced material and service costs (Attaran, 2002; Vanjoki et al., n.d.). The success stories of countries like Bahrain, Norway, Italy, Singapore, Turkey, India, and Malaysia, as reported by (*GeBIZ: Government e-Procurement System in Singapore | Centre For Public Impact (CPI)*, n.d.), indicate that e-GP technology enhances competition among bidders in public works and services, resulting in the procurement of best quality and price ratios.

2.4.2 Challenges in e-GP Implementation

However, the deployment of e-GP initiatives is not devoid of challenges. End-user resistance, as highlighted by (Cole et al., 2017), poses a significant hurdle. The reluctance of individuals to adapt to new technological platforms, as indicated by (Hawking et al., 2004), can impede the smooth transition to e-GP workflows.

Issues related to the technological capability among suppliers and internal barriers within organizations are emphasized by (Kaliannan, Halimah, et al., 2009; Singer, 2003). These challenges point to the need for comprehensive training programs and a focus on change management to enhance user readiness (Vaidya et al., 2006).

Furthermore, issues related to system integration, standardization, and supplier preparation emerge as significant challenges, as noted by (Angeles & Nath, 2007; Kaliannan, Halimah, et al., 2009). These challenges underscore the complexity of aligning diverse systems and processes within the e-GP framework.

In the context of Bangladesh, the study by Hasan highlights that the unique nature of work undertaken by the Public Works Department (PWD) presents additional challenges in fully integrating e-GP into all procurement activities. Resistance from officials and contractors in the face of a completely changed system, as noted by Hasan, further underscores the challenges associated with e-GP implementation in specific organizational contexts.

In short, while e-GP implementation offers substantial benefits in terms of efficiency, transparency, and competitiveness, addressing challenges related to end-user resistance, technological capability, system integration, and organizational readiness is crucial for ensuring the successful adoption and sustained impact of e-GP systems in public procurement practices. The experiences documented in the literature provide valuable insights for governments and organizations navigating the complexities of e-GP implementation.

2.5 Implementation of e-GP in Government Agencies

The implementation of e-GP in government agencies represents a pivotal shift in modernizing procurement processes, enhancing efficiency, and fostering transparency. As governments worldwide embrace digital transformation, e-GP has emerged as a cornerstone in revolutionizing how public procurement is conducted.

According to (Aman & Kasimin, 2011), e-GP implies the integrated use of technological tools for managing all phases of government procurement, encompassing planning, ordering, sourcing, approval, receipt, and payment in an online environment. The experiences of various countries, as documented by (GeBIZ: Government e-Procurement System in Singapore | Centre for Public Impact (CPI), n.d.), highlight the positive impact of e-GP implementation, including increased competition among bidders, improved procurement efficiency, and enhanced transparency.

In the context of Bangladesh, the Bangladesh Public Procurement Authority, BPPA (erstwhile, Central Procurement Technical Unit, CPTU) under the Ministry of Planning has played a crucial role in spearheading the development and operation of the National e-Government Procurement (e-GP) portal. Initially introduced with targeted agencies such as LGED, RHD, BWDB, and REB, the e-GP system has progressively expanded to cover 291 Procuring Entities (PEs) across various sectors. Local Government Engineering Department (LGED), as pioneer in the construction arena, has successfully completed 1,82,072 tenders under the e-GP system (total number of tenders invited in e-GP till February 2023), marking considerable progress in its adoption (Bangladesh Public Procurement Authority, 2023)

However, the implementation of e-GP in government agencies is not without its challenges. As highlighted by Hasan, resistance from officials and contractors is a notable hurdle, emphasizing the need for change management strategies. The unique nature of work undertaken by the Public Works Department (PWD) poses additional challenges, raising questions about the feasibility of applying e-GP to 100% of procurement activities.

The study by (Damsgaard & Somasundaram, n.d.) emphasizes the importance of robust change management mechanisms for a successful transition from manual procurement systems to automated e-GP environments. Training programs for procurement staff and external vendors are crucial for developing the capacity to engage optimally with the e-GP platform. (Shakya, 2017) Moreover, addressing issues related to system integration, standardization, and supplier preparation is imperative for the seamless adoption of e-GP across diverse government agencies (Angeles & Nath, 2007; Kaliannan, Halimah, et al., 2009). The experiences of countries such as Singapore, Turkey, and India, as reported by (GeBIZ: Government e-Procurement System in Singapore | Centre for Public Impact (CPI), n.d.), underscore the positive outcomes of e-GP implementation, including increased efficiency in document transmission and reduced chances of corruption.

In conclusion, the implementation of e-GP in government agencies signifies a transformative journey toward modernizing procurement practices. While the benefits are substantial, challenges such as resistance, the unique nature of organizational work, and technical complexities necessitate a strategic and comprehensive approach to ensure successful adoption and sustained impact. The literature provides valuable insights for governments and agencies navigating the complexities of e-GP implementation, offering lessons and best practices for optimizing the use of technological tools in public procurement.

2.6 Gap in Literature Regarding e-GP Implementation in BBS

The existing literature on e-GP implementation provides a comprehensive overview of its benefits, challenges, and experiences in various government agencies. However, a notable gap exists concerning the specific context of the Bangladesh Bureau of Statistics (BBS). While broader discussions encompass the challenges faced by government agencies in embracing e-GP, there is a dearth of in-depth analysis focusing on the unique circumstances and requirements of BBS.

The studies by (Aman & Kasimin, 2011; Mensah, 2020) offer insights into the potential benefits of e-GP mechanisms, such as increased order accuracy, transaction efficiency, and greater integration between trading partners. However, these studies provide a generalized perspective and do not delve into the specific needs and intricacies of a statistical agency like BBS.

BBS, being a pivotal institution responsible for collecting and disseminating official statistics, operates in a distinct environment compared to other government agencies. The nature of its work involves extensive data collection, analysis, and reporting, making its procurement requirements potentially distinct from other sectors.

The research by (Vaidya et al., 2006) emphasizes the benefits of e-GP adoption in enhancing transparency, competitiveness, and integrity in public procurement. However, it does not specifically address how these benefits translate to the statistical domain, where accuracy, reliability, and timeliness of data are paramount.

Moreover, the challenges outlined in the literature, such as end-user resistance, lack of technological capability, and internal barriers (Cole et al., 2017; Hawking et al., 2004; Singer, 2003), are discussed in a broad context. There is a need for a focused examination of how these challenges manifest within the BBS setting, considering its specialized functions and responsibilities.

The experiences of government agencies like LGED, RHD, BWDB, PWD and REB, as documented in the literature, provide valuable lessons for e-GP implementation. However, BBS may encounter unique challenges or opportunities that require a tailored approach. A study specifically addressing the e-GP implementation in BBS could shed light on these nuances, contributing to a more nuanced understanding of the intricacies involved.

In conclusion, the gap in the literature regarding e-GP implementation in BBS underscores the need for targeted research that considers the specific characteristics, challenges, and opportunities

within the context of a statistical bureau. Such an investigation would not only contribute to the academic discourse on e-GP but also provide actionable insights for BBS and similar organizations aiming to enhance their procurement processes through digital transformation.

Chapter 3: Methodology

3.1 Research Design

This study utilizes a mixed methods approach for data collection and analysis to enable methodological triangulation and derive a comprehensive assessment through integration of qualitative and quantitative insights regarding the e-GP implementation process, outcomes, issues, and staff experiences at BBS. As (Creswell & Clark, 2017) highlight, a mixed methods model leveraging the complementary strengths of both qualitative and quantitative techniques allows for a more complete investigation of complex multidimensional research problems.

The qualitative aspects rely on Key Informant Interviews (KIIs) with senior BBS procurement officials directly involved with e-GP adoption at the decision-making level. This elicits their unique perspectives and experiences which provide crucial contextual insights into implementation realities, challenges and impact at BBS based on their subject expertise and administrative vantage point.

Quantitative techniques comprise a survey questionnaire administered to procurement staff across various grades and roles at BBS. Descriptive statistics generated from closed-ended survey responses facilitate generalizable assessments regarding efficiency, transparency and other outcomes associated with quantitative indicators or measurable dimensions. Further statistical tests assess variables like process completion time to compare manual and e-GP procurement.

Thus, integration of qualitative narrations and quantitative metrics enables capturing both the “what” and “how” relating to e-GP implementation and effects within BBS for a holistic evaluation.

3.2 Data Collection Methods and Tools

Primary data collection relies on two key instruments –

- Structured Questionnaire Survey with Likert-scale & closed questions for staff

Secondary data from BBS documents, Server Logs, and published reports supplements primary findings.

Key aspects covered through KIIs include:

- Impact on transparency, efficiency, bid competition.
- Key challenges faced.
- Recommendations for system improvement
- Efficiency - time, cost, and workforce savings
- Transparency – availability of information
- Competitiveness – bidding rates, supplier base expansion

3.3 Sampling Technique

For primary data collection:

Questionnaire Survey: Eighteen procurement staff from various grades in BBS.

Secondary data is accessed from publicly available documents and earlier research studies on e-GP.

3.4 Data Analysis

Qualitative data from interviews will be coded using thematic analysis for categorization based on emerging patterns and theorized themes. Descriptive and summary statistics obtained from quantitative survey data will be presented using tables and charts. Statistical tests will analyze time and cost data to assess automation impacts through quantitative comparisons between manual and e-GP procurement.

The key outcomes expected are – improved process efficiency, enhanced transparency, expanded bid competition, technological adequacy, and staff preparedness. Findings will be interpreted to identify areas of strength, issues and challenges associated with e-GP adoption at BBS to provide implementers and policy makers with pertinent recommendations.

3.5 Research Framework

The following flow chart is the mirror of activities followed under a research framework.

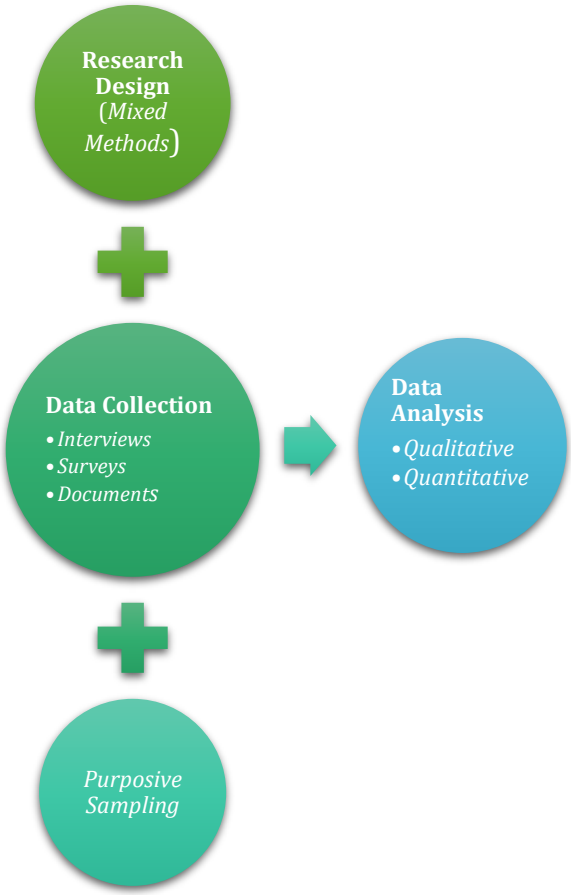

Figure 3.5: Glimpse of Research Framework

The above flow chart shows the steps of the research framework where designing research in mixed methods, conducting data collection & purposive sampling and then analyze data through qualitative and quantitative methods.

Chapter 4: Findings

This chapter presents the key findings from the analysis of primary data collected through the survey questionnaire administered to eighteen procurement staff across various grades at BBS. The results are structured around the charts depicting responses to the closed-ended survey questions. Each chart is analyzed in detail, highlighting the critical insights into staff experiences, perspectives, and efficiencies regarding the e-GP implementation at BBS.

4.1 Respondent Profile

4.1.1 Designations

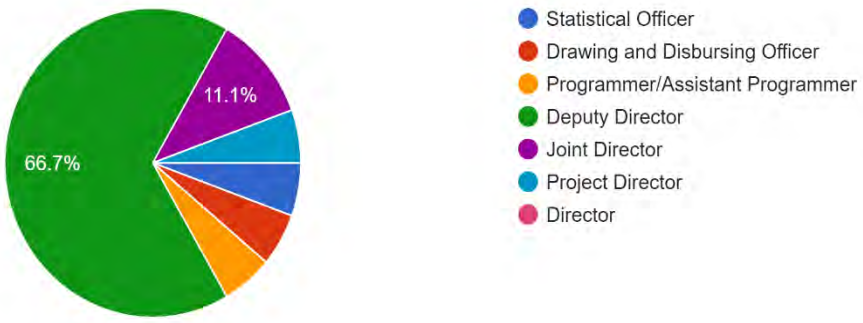

Figure 4.1.1: Designations of Concerned BBS Officials

The pie chart presented in figure 4.1.1 depicts that majority of the survey respondents in BBS (66.7%) were Deputy Directors, followed by Joint Director (11.1%), Project Director, Statistical Officer, Drawing & Disbursing Officer (An administrative officer is assigned in BBS on behalf of Director General for playing role to spend operational budget) and Programmer constituting 5.6% each.

This indicates inputs were gathered from personnel across multiple hierarchical levels ranging from mid to senior management positions who have oversight or active engagement with procurement processes. The prevalence of managerial grades indicates findings would be shaped by the informed perspectives of staff involved in significant procurement decisions and e-GP operations.

4.1.2 Experience in Public Procurement

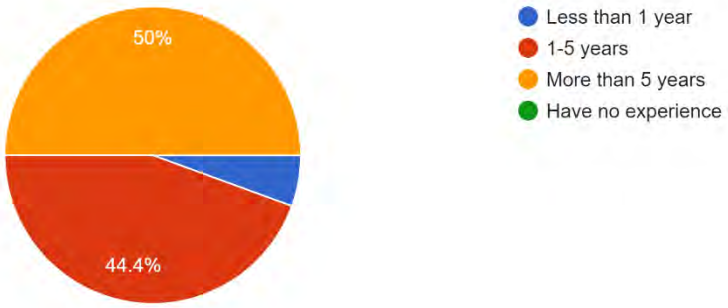

Figure 4.1.2: Experience in Public Procurement

In figure 4.1.2, it is observed that half the respondents have over 5 years of experience in public procurement, while 44.4% have 1 to 5 years experience. Only a minority (5.6%) have less than 12 months experience.

This highlights that an overwhelming majority have substantial experience spanning over a year. Their inputs on comparative assessment of manual and e-GP procurement would hence reflect seasoned insights based on extended engagement, enhancing result reliability regarding outcomes, limitations and benefits.

4.2 Procurement Process Parameters

4.2.1 Type of Tendering Documents Used in BBS

Figure 4.2.1: Type of Tendering Documents used in BBS

The pie chart presented in figure 4.2.1 depicts that 55.6% reported using paper-based documents, while 38.9% use both paper documents and electronic forms. Only 5.6% rely entirely on electronic documents, underscoring that dependence on manual formats persists despite e-GP assimilation. This indicates scope for further reducing paper dependency by enabling greater shift towards online documentation.

4.2.2 Reasons for Using Manual Tendering in BBS

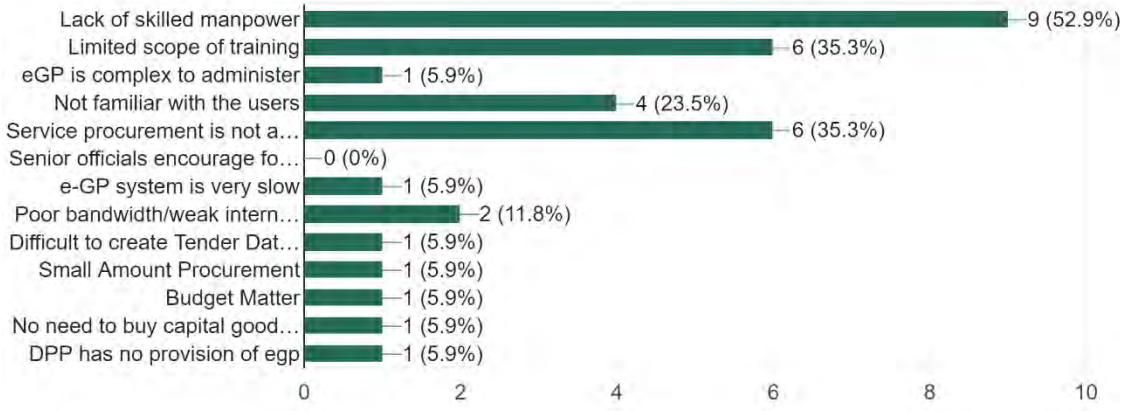

Figure 3.2.2: Reasons for Using Manual Tendering in BBS

The bar chart presented in figure 4.2.2 depicts that The leading causes identified were lack of skilled manpower (52.9%), limited training opportunities (35.3%) and inability to apply e-GP for service procurement (35.3%). For 23.5%, lack of user familiarity with the system poses a barrier.

Evidently, capacity deficits regarding user expertise and supporting infrastructure are primary factors inhibiting effective e-GP adoption across all activities. Targeted training programs and change management initiatives to address knowledge gaps and acclimatize staff to online procurement can aid wider assimilation.

4.3 e-GP Familiarity and Perceived Impact

4.3.1 e-GP Familiarity in BBS

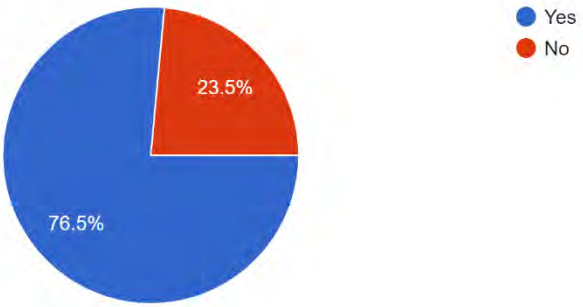

Figure 4.3.1: e-GP Familiarity among BBS officials

The pie chart presented in figure 4.3.1 depicts that Majority (76.5%) indicate familiarity with the e-GP system, though the degree of understanding varies. Only 23.5% claim that they have no familiarity with e-GP system.

4.3.2 Knowledge on e-GP

Figure 4.3.2: Understanding with e-GP

The pie chart presented in figure 4.3.2 depicts that Only 33.3% claim clear understanding, while 44.4% have limited knowledge and 22.2% claim that they are familiar but lack of practical experience. This points to varying levels of user capability regarding the system, warranting expanded training

4.3.3 Participation in Tendering Process through e-GP

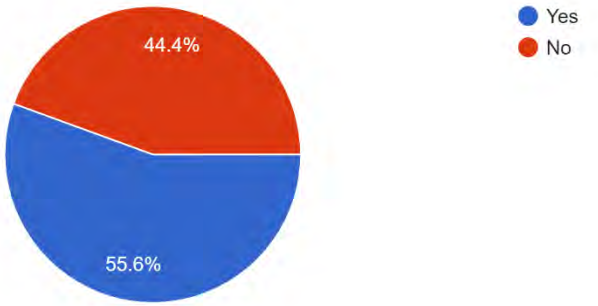

Figure 4.3.3: Participation of BBS officials in Tendering Process through e-GP

The pie chart presented in figure 4.3.3 depicts that 55.6% confirmed participation in e-GP tendering as an authority or committee member and 44.4% confirmed that they did not participate in e-GP tendering as an authority. Direct engagement allows informed assessments about execution efficiencies and outcomes. For others, integration of hands-on experience can enrich perspectives.

4.3.4 Perceived e-GP Benefits

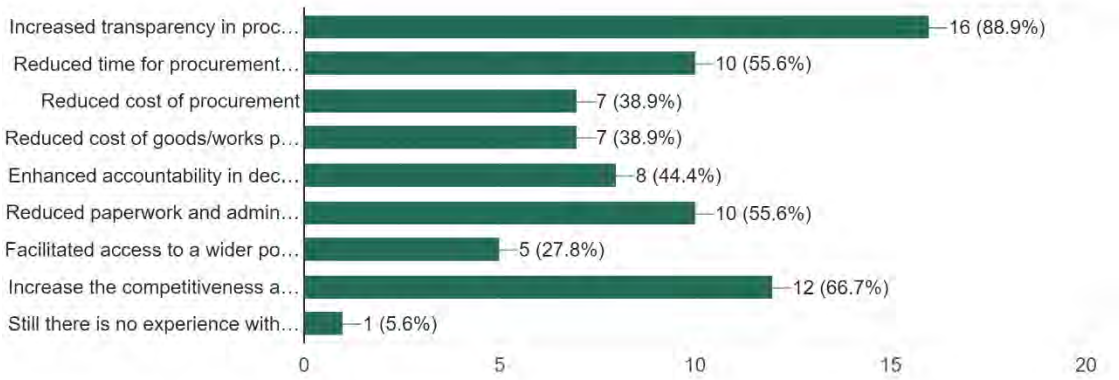

Figure 4.3.4: Perceived e-GP Benefits realized by BBS officials

The bar chart presented in figure 4.3.4 depicts that The recognized benefits consistent across most respondents are increased transparency (88.9%), time savings (55.6%) and reduced paperwork (55.6%). Many also acknowledged benefits like expanded competition (66.7%), accountability (44.4%) etc. This indicates acknowledgement regarding e-GP's effectiveness in addressing limitations in manual tendering.

4.3.5 Perceived e-GP Challenges

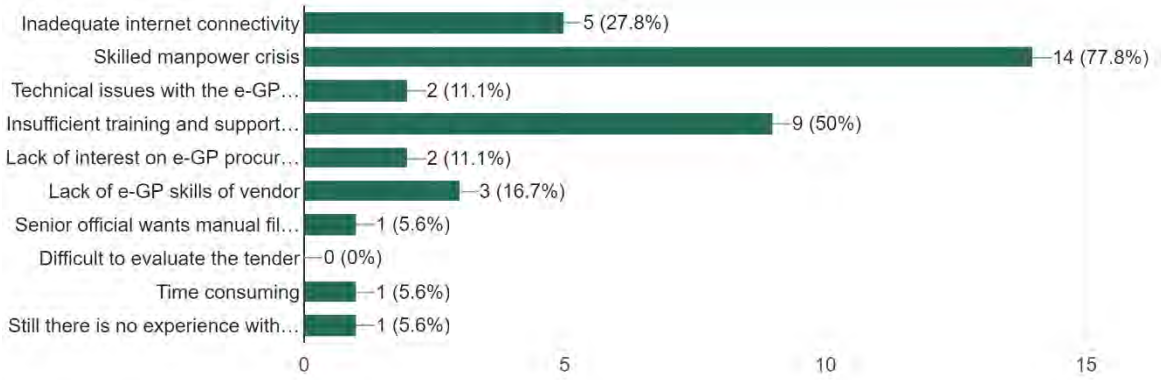

Figure 4.3.5 Perceived e-GP Challenges realized by BBS officials

The bar chart presented in figure 4.3.5 depicts that The primary difficulties highlighted are lack of skilled manpower (77.8%), inadequate training support (50%) and issues like internet connectivity affecting access (27.8%). Evidently, recurring skill and infrastructure constraints continue to impede optimal utilization, despite growing adoption.

4.3.6 Perceived e-GP Impact

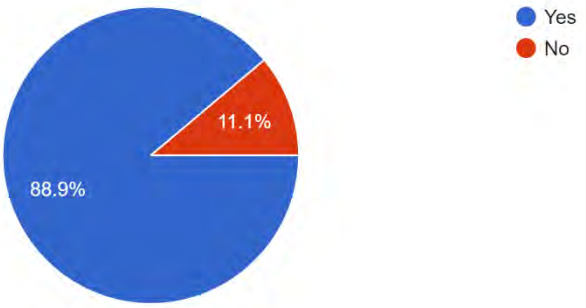

Figure 4.3.6: Perceived e-GP Impact realized by BBS officials

The pie chart presented in figure 4.3.6 depicts that An overwhelming majority (88.9%) perceive the e-GP system has positively impacted procurement at BBS. This endorses it as a beneficial shift, dramatically transforming tendering efficacy.

4.4 Procurement Efficiency

4.4.1 Efficiency before e-GP Implementation in BBS

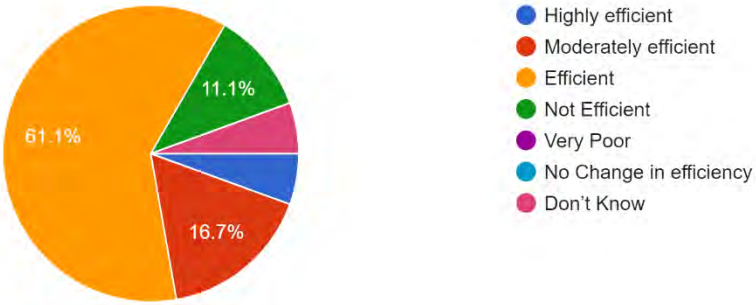

Figure 4.4.1 Efficiency before e-GP Implementation in BBS

The pie chart presented in figure 4.4.1 depicts that 61.1% assessed the overall efficiency level prior to e-GP adoption as efficient while 16.7% viewed it being moderately efficient. Only 11.1% felt the earlier system lacked efficiency. This indicates a majority were satisfied with the functioning, though scope for improvement existed.

4.4.2 Efficiency after e-GP Adoption in BBS

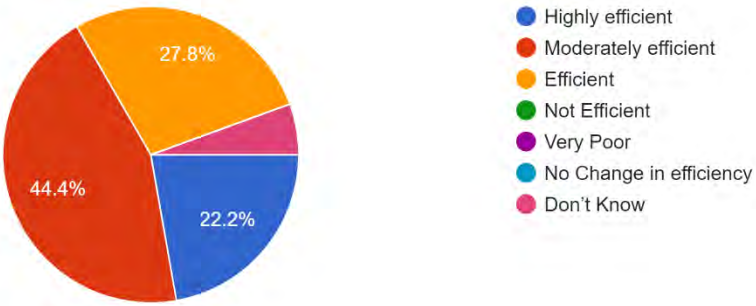

Figure 4.4.2: Efficiency after e-GP Adoption in BBS

The pie chart presented in figure 4.4.2 depicts that only 27.8% now rate procurement as simply efficient after e-GP uptake. But 66.6% feel it is moderately to highly efficient, showing positive gains. Hence, e-GP assimilation has translated into substantial improvements by enabling relatively greater efficiency than the earlier approach.

4.4.3 Impact on Time and Cost Efficiency

A comparative analysis of sample tender processing times before and after e-GP adoption (Figure 13) showed an average cycle time reduction of about 7.11 days during tendering phase. It is observed that time reduced during tendering phase due to avoiding manual beauricratic process by e-GP portal. At the same time, cost reduced during contract delivery stage of procurement amounting Tk.13.92 lakhs on an average for large volume tenders in BBS.

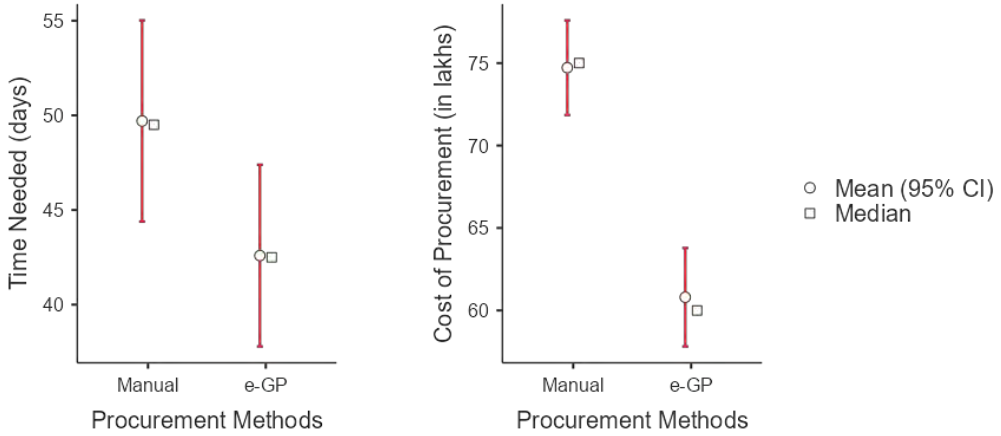

Figure 4.4.3: Impact on Time and Cost Efficiency in Procurement

The boxplot presented in figure 4.4.3 indicates notable gains in efficiency by cutting down on previously manual efforts now automated through the digital system. We tested this difference using t-test, and the results showed that the difference is statistically significant ($p < 0.05$).

Independent Samples T-Test

		Statistic	DF	p	Mean difference	SE difference
Time Needed (days)	Student's t	1.95	198	0.027	7.11	3.65
Cost of Procurement (in lakhs)	Student's t	6.59	198	< .001	13.92	2.11

Note. H_a $\mu_{Manual} > \mu_{e\text{-}GP}$

The t-test results showed that the time and cost difference between the e-GP and manual tendering processes was statistically significant. This suggests that e-GP is a more efficient way to manage the tendering process.

The reduction in cycle time and cost is likely due to the fact that e-GP automates many of the manual processes involved in tender processing, such as document submission, review, and approval. This eliminates the need for manual data entry and reduces the risk of human error. Additionally, e-GP provides a centralized platform for all tender-related information, which makes it easier for stakeholders to track the progress of tenders and identify potential bottlenecks.

4.5 Outcomes of e-GP Adoption

4.5.1 Positive Changes After e-GP

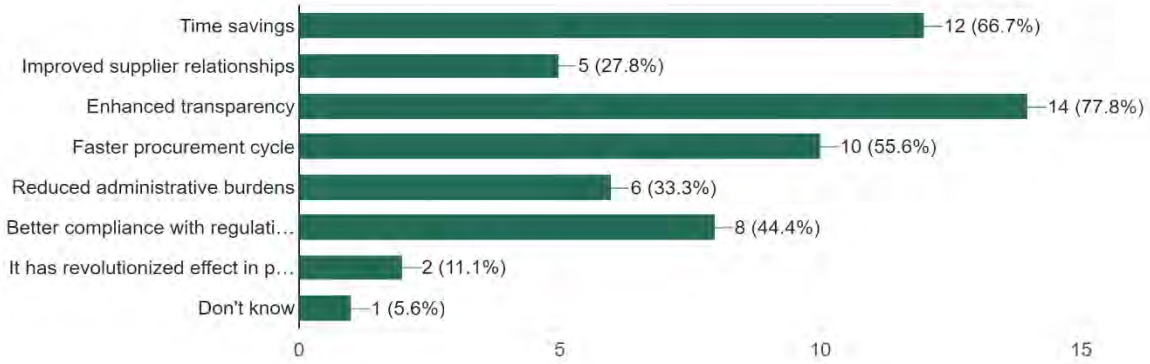

Figure 4.5.1: Positive Changes After e-GP in BBS

The bar chart presented in figure 4.5.1 depicts that the most widely acknowledged transformations are enhanced transparency (77.8%), times savings in tendering (66.7%) and faster completion of procurement cycles (55.6%).

About 44.4% recognize e-GP enables better compliance enforcement while 33.3% point to lower administrative burdens. This affirms that from efficiency, information access to accountability perspectives, e-GP has significantly optimized procurement at BBS.

4.5.2 Fairness Achievement

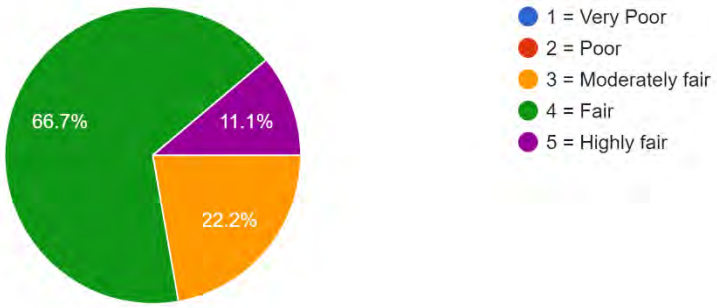

Figure 4.5.2: Fairness Achievement in BBS in Procurement Process

The pie chart presented in figure 4.5.2 depicts that Importantly, 66.7% confirm that the current system results in fair outcomes, indicating effectiveness in ensuring unbiased quality decision-making. 22.2% still perceive the degree of fairness as moderate, warranting on-going improvement for total acceptance across all respondents.

4.6 Additional Insights from the Respondents

Figure 4: Additional Recommendations from the Respondents to improve e-GP.

The wordcloud presented in figure 4.6 is a thematic representation of the additional recommendations from survey respondents. Word sizes in the wordcloud are based on their frequencies (Tuhin Rana, 2023). The survey results offer crucial insights regarding the e-GP assimilation at BBS. Despite familiarity and growing adoption levels, gaps in user capabilities, infrastructural inadequacies, and inability to apply e-GP for service procurement remain key constraints. While transparency and efficiency have undoubtedly improved after e-GP uptake, leveraging its full potential requires comprehensive training programs and policy changes to mandate online procurement across all areas. As greater efficiency, cost savings and fairer outcomes are realized, e-GP must be continually upgraded to surmount existing barriers through appropriate change management.

Chapter 5: Discussion

This chapter provides an interpretative discussion of the key findings from the study considering the literature and theoretical concepts reviewed earlier. It is structured around the core themes relating to the research questions and objectives delineated in Chapter 1.

5.1 Transformation of Procurement Processes After e-GP Implementation

The study results affirm that e-GP assimilation has significantly transformed procurement processes within BBS across multiple dimensions related to efficiency, transparency, competitiveness, and ease of execution. This endorses the central research premise regarding e-GP's modernizing impact in the public procurement domain.

As depicted in Figure 4.4.2 and 4.4.3, notable improvements in time savings, faster completion of tender cycles and lower administrative workloads directly address limitations relating to bureaucratic delays, high transaction costs and process complexities associated with manual procurement systems (Schapper et al., 2006; Aman & Kasimin, 2011).

The reported gains after e-GP adoption at BBS closely reflect those experienced by agencies like LGED, RHD and PWD as documented in existing literature (World et al., 2020; Hasan). This establishes conformity with broader e-Government procurement patterns across the public sector.

However, persisting reliance on paper-based documents among staff (Figure 4.2.1) inhibits fuller transition towards online procurement. With only 5.6% relying completely on electronic formats, despite 76.5% claiming e-GP familiarity (Figure 4.3.1), systematic bottlenecks to full adoption are evident. As the literature highlights, organizational readiness and human factors significantly shape successful e-GP embeddedness (Ramanathan et al., 2014).

5.2 Assessment of Benefits and Implementation Challenges

The multi-tiered benefits identified, spanning increased transparency, faster processes, lowered costs, and expanded competition (Figure 4.3.3), directly validate assertions made in academic discourse regarding e-GP's transformative potential (Vaidya et al., 2006; Hui et al., 2013). This affirms that global techno-centric reforms promising efficiency gains through administrative automation have replicable positive impacts across country contexts.

However, the acute shortage of skilled personnel and infrastructural limitations emphasized in Figures 4.2.2 and 4.3.4 reinforce the challenges of e-GP adoption in resource-constrained environments noted by scholars (Hasan; Al-Hossienie & Barua, 2013). The case of BBS proves that even with strong institutional commitment, engrained technological and skill deficits play an impeding role, requiring sustained investments. Nevertheless, the dramatically positive perceived impact among 88.9% staff (Figure 4.3.5) underscores that transformational benefits outweigh adoption barriers.

5.3 Comparative Efficiency and Transparency between Manual and e-GP Methods

The survey results lend quantitative evidence that e-GP enables greater transparency and efficiency gains compared to paper-based procurement. The acknowledgement of benefits like enhanced information access, times savings, faster completion, and lower administrative workloads by over 50% respondents (Figures 4.3.3 & 4.4.3) proves that on metrics linked to efficiency and transparency, e-GP adoption has been advantageous for BBS. This aligns with assertions made in existing scholarship over the relative superiority of tech-enabled procurement (Aman & Kasimin, 2011; Vaidya et al., 2006).

According to the study, 94.4% of the staff found the current e-GP system to be efficient, with 22.2% rating it as highly efficient, 44.4% as moderately efficient, and 27.8% as efficient. In contrast, only 5% considered the old manual system as highly efficient, 16.7% as moderately efficient, and 61.1% as efficient. (Figures 4.4.1 & 4.4.2).

This indicates e-GP assimilation has translated procedural fluency to a significantly higher degree, quantitatively distinguishing it from the paper-based approach. The expansion of bidder participation noted by over 66 percent staff also proves that competitiveness has grown. Thus, on core metrics of process efficiency, information access and supplier base expansion which various scholars employ for comparative assessment (Teo et al., 2009; Vaidya et al., 2006; Bof & Previtali, 2007), e-GP adoption has marked a demonstrable progression from the manual tendering method.

5.4 Staff Recommendations on e-GP Effectiveness

The persistence of barriers like workforce and skill deficits (Figures 4.2.2 & 4.3.4), poor adaptation to electronic formats (Figure 4.2.1) and inability to apply e-GP for service procurement (Figure 4.2.2) calls for multifaceted strategic interventions. As staff themselves recommend -

expanding training programs can build technological capacities; policy changes to mandate online tendering across all areas can normalize e-GP even where technical complexities exist; continued system upgrading can remove process bottlenecks. Such steps, encapsulating technological, regulatory and infrastructure transformation, can consolidate the promising gains and address lingering hindrances noted in the survey results. This structured roadmap aligns with recommendations in existing literature around the importance of executive vision, technological state building and regulatory impetus for successful e-GP assimilation in developing countries (Hui et al., 2013; Schapper et al., 2006).

Thus, staff insights offer pertinent recommendations centered on capability enhancement programs, mandatory adoption policies and continuous e-GP refinements to successfully direct the promising transformations towards optimal utilization and universalization.

Chapter 6: Conclusion

This mixed-methods study evaluated the implementation and impact of the e-GP system at BBS through quantitative surveys and qualitative interviews with procurement staff. The research provides an evidence-based assessment of how e-GP has transformed processes, identified benefits/challenges, and compared its effectiveness to the previous manual system.

6.1 Summary of Key Findings

The analysis revealed the following key findings:

- e-GP adoption resulted in quantifiable efficiency gains - reducing tender processing times by an average of 7 days and costs by around 13 lakhs taka.
- Qualitative benefits included enhanced transparency, reduced paperwork, expanded supplier participation, and faster tender completion.
- However, gaps persist in user skills/training, technological constraints, and inability to apply e-GP for service procurement.
- Despite challenges, an overwhelming majority acknowledged e-GP's positive overall impact compared to the manual approach.

6.2 Recommendations for Further Improving e-GP at BBS

Based on the insights gathered, the following recommendations can guide further e-GP improvements at BBS:

1. Implement comprehensive, role-based training programs to build staff capabilities and address identified knowledge gaps regarding e-GP processes and documentation.
2. Extend the e-GP system's applicability to service procurement through policy/regulatory changes and workflow integration.
3. Continuously upgrade e-GP technology, interfaces and features based on evolving requirements and user feedback received.
4. Strengthen monitoring mechanisms to assess e-GP performance, identify bottlenecks and areas requiring support.
5. Undertake systematic review and reengineering of internal procurement workflows to seamlessly integrate e-GP across all activities.
6. Conduct advocacy campaigns to generate awareness, communicate benefits and promote acceptance among staff and suppliers.

Through initiatives spanning training, regulatory reforms, technological enhancements, process reengineering and change management, BBS can consolidate the gains achieved so far and unlock e-GP's full potential for modernizing public procurement practices.

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Project Timeline

Activity	W1 to W4	W5 to W8	W9 to W12	W12 to W17	W18 to W21
September 2023 1. Literature review 2. Develop research plan and proposal. 3. Pre-test research instruments					
October 2023 1. Obtain approvals and permissions. 2. Data collection from BBS (interviews, surveys) 3. Validate and cross-reference data					
November 2023 1. Complete data collection 2. Data entry and cleaning 3. Descriptive data analysis					
January 2024 1. Advanced statistical analysis 2. Interpretation of results 3. Draft case study report					
February 2024 1. Refine and finalize case study report. 2. Prepare presentation. 3. Submit report and present findings. 4. Reflect on the study process and lessons learned. 5. Prepare final project report and archive documents					

Annexure: Survey Questionnaire

A Study on the Implementation of Electronic Government Procurement (e-GP) in Bangladesh Bureau of Statistics (BBS): Impact on Present Procurement Practices and Future Scopes.

This survey aims to assess the current procurement practices and the impact of e-GP in the Bangladesh Bureau of Statistics (BBS). Your responses will be used solely for academic purposes and your individual response will not be shared anywhere. Your cooperation in this regard is highly appreciated.
Thank
you for participating in this survey. Your valuable input will contribute to the study on e-GP implementation in BBS.

* Indicates required question

1. **1. Name** *

2. **2. Designation** *

Mark only one oval.

- ◯ Statistical Officer
- ◯ Drawing and Disbursing Officer
- ◯ Programmer/Assistant Programmer
- ◯ Deputy Director
- ◯ Joint Director
- ◯ Project Director
- ◯ Director

3. **3. Procuring Entity (PE) Office name & address:** *

4. **4. Total Experience in Public Procurement:** *

Mark only one oval.

- Less than 1 year
- 1-5 years
- More than 5 years
- Have no experience

5. **5. What type of documents is currently using by your PE office for procurement?**

[If the answer is "Electronic Government Procurement (e-GP) System" please go to Q-7, otherwise Q-6]

Mark only one oval.

- Paper-based documentation (manual tendering process)
- Electronic Government Procurement (e-GP) System
- Both paper-based and electronic system

6. **6. For you, what are the reasons for using manual tendering rather than e-GP?**

Check all that apply.

- [ ] Lack of skilled manpower
- [ ] Limited scope of training
- [ ] eGP is complex to administer
- [ ] Not familiar with the users
- [ ] Service procurement is not added yet in the e-GP system.
- [ ] Senior officials encourage for manual tendering
- [ ] e-GP system is very slow
- [ ] Poor bandwidth/weak internet connectivity of e-GP system
- [ ] Difficult to create Tender Data Sheet (TDS) and evaluate the tender for technical packages
- [ ] Other: _____

7. **7. Are you familiar with the concept of Electronic Government Procurement(e-GP)?**

Mark only one oval.

- ◯ Yes
- ◯ No

8. **8. What is your understanding on the e-GP system?** *

Mark only one oval.

- ◯ Clear understanding with practical experience
- ◯ Familiar but lack of practical experience
- ◯ Limited knowledge
- ◯ No idea

9. **9. Have you ever participated as Authorized User (AU)/Tender Opening Committee (TOC)/Tender Evaluation Committee (TEC)/Technical Sub Committee (TSC) member in a procurement activity using the e-GP system in BBS?** *

Mark only one oval.

- ◯ Yes
- ◯ No

10. **10. What benefits have you experienced or anticipate with the use of the e-GP system in BBS?** *

Check all that apply.

- ☐ Increased transparency in procurement processes
- ☐ Reduced time for procurement process
- ☐ Reduced cost of procurement
- ☐ Reduced cost of goods/works procured
- ☐ Enhanced accountability in decision-making
- ☐ Reduced paperwork and administrative burden
- ☐ Facilitated access to a wider pool of suppliers
- ☐ Increase the competitiveness among the supplier.
- ☐ Other: _____

11. **11. What challenges or difficulties have you encountered while operating the e-GP system in BBS?** *

Check all that apply.

- ☐ Inadequate internet connectivity
- ☐ Skilled manpower crisis
- ☐ Technical issues with the e-GP software
- ☐ Insufficient training and support for users
- ☐ Lack of interest on e-GP procurement by vendors
- ☐ Lack of e-GP skills of vendor
- ☐ Senior official wants manual file consecutively at the time of e-GP system
- ☐ Difficult to evaluate the tender
- ☐ Time consuming
- ☐ Other: _____

12. **12. Do you believe the implementation of e-GP in BBS has positively impacted procurement practices within the institute?** *

Mark only one oval.

- ◯ Yes
- ◯ No

13. **13. If the answer is no, please provide a brief explanation for your response:**

14. **14. How would you rate the overall efficiency of procurement processes on the basis of timeliness, cost saving, competitiveness in BBS before the implementation of e-GP?** *

Mark only one oval.

- ◯ Highly efficient
- ◯ Moderately efficient
- ◯ Efficient
- ◯ Not Efficient
- ◯ Very Poor
- ◯ No Change in efficiency
- ◯ Don't Know

15. **15. How would you rate the overall efficiency of procurement processes on the basis of timeliness, cost saving, competitiveness in BBS after the implementation of e-GP?** *

Mark only one oval.

- ◯ Highly efficient
- ◯ Moderately efficient
- ◯ Efficient
- ◯ Not Efficient
- ◯ Very Poor
- ◯ No Change in efficiency
- ◯ Don't Know
- ◯ Other: _____

16. **16. What opportunities or positive changes have you observed since the implementation of e-GP in BBS?** *

Check all that apply.

- ☐ Time savings
- ☐ Improved supplier relationships
- ☐ Enhanced transparency
- ☐ Faster procurement cycle
- ☐ Reduced administrative burdens
- ☐ Better compliance with regulations
- ☐ It has revolutionized effect in public procurement system
- ☐ Other: _____

17. **17. On a scale of 1 to 5, how would you rate the level of fairness achieved in procurement practices through eGP implementation in BBS?** *

Mark only one oval.

- 1 = Very Poor
- 2 = Poor
- 3 = Moderately fair
- 4 = Fair
- 5 = Highly fair

18. **18. Please share any additional comments or insights you may have regarding the implementation of e-GP in BBS or its impact on procurement practices:**