Impact of Electronic Government Procurement (e-GP) System on Procurement Efficiency: A Case Study of Smadrup Jongkhar Dzongkhang

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Abstract

This research investigates the impact of the Electronic Government Procurement (e-GP) system on procurement efficiency in Samdrup Jongkhar Dzongkhag, focusing specifically on time efficiency and transparency. Data was collected from procurement officers, engineers, gups, and bidders within Samdrup Jongkhar Dzongkhag, including Thromde, Gewogs, and educational institutions, through online survey questionnaires. The questionnaire is divided into two sections: Section A gathers respondents' personal opinions on the effectiveness of the e-GP system using a Likert scale, while Section B assesses user experiences with the system through a frequency-based scale, highlighting challenges and potential areas for improvement. Out of 66 targeted respondents, 61 valid responses were obtained, yielding a response rate of 92%. Data were analyzed using Microsoft Excel, employing descriptive statistics such as frequencies, percentages, and mean scores. The findings reveal that the e-GP system significantly enhances transparency and efficiency (M=4.07), though challenges regarding user training remain a critical concern (M=2.77). Consequently, the study recommends strengthening capacity-building programs and improving technical support to optimize the systems effectiveness within Bhutans procurement landscape.

Keywords— e-GP system, time efficiency, transparency, government procurement

1 Introduction

1.1 Background of the Study

E-GP is the use of information technology (especially the Internet) by governments in conducting their procurement activities with suppliers for the acquisition of works, goods, and consultancy

services required by the public sector. The adoption of e-GP has the capacity to increase the transparency and efficiency of government procurement (World Bank, 2019).

The Electronic Government Procurement (e-GP) System of the Royal Government of Bhutan facilitates all Procuring Agencies to publish the Tenders, Corrigenda, and Notification of Contract Award. The Electronic Government Procurement (e-GP) system helps in promoting transparency and efficiency, where information and communication technology (ICT) shall be utilized for conducting procurement procedures. Accordingly, the e-GP system shall serve as the primary and definitive source of information on government procurement. The primary objective of the e-GP system portal is to provide a single point of access to the information on procurement made across various Procuring Agencies. (Ministry of Finance, n.d.). All government agencies shall use the e-GP system for all kinds of procurement activities, and it shall be guided by the e-GP guidelines issued by the Ministry of Finance.

The e-Government Procurement (e-GP) system consists of multiple modules designed to enhance efficiency and transparency in the procurement process. Therefore, with the help of all those modules, the e-GP system encompasses a wide range of benefits such as increased value for money, reduced corruption and malpractices, efficient monitoring of contracts through the e-contract management system, greater transparency through automated publication of tenders and contract awards, and also, the bids can be submitted from any location. Given the growing significance of e-GP in Bhutans procurement system, this study aims to assess its impact on procurement efficiency, particularly in terms of time savings and transparency in Samdrup Jongkhar Dzongkhag.

1.2 Problem Statement

The adoption of electronic government procurement (e-GP) systems has enhanced public procurement by promoting efficiency, transparency, and accountability. The implementation of the e-GP system aims to align with global best practices and streamline procurement processes. However, its adoption has highlighted challenges, such as inadequate user knowledge, technical inefficiencies, and resistance to change among stakeholders (Asian Development Bank, 2020). Based on the pilot survey conducted on 13th December 2024 from the procurement officers, engineers, bidders, and local leaders in Samdrup Jongkhar, there is a need for robust infrastructure, stakeholder capacity building, and continuous system improvement. Despite government initiatives, gaps in system usability and user adoption remain significant, particularly in remote regions like Samdrup Jongkhar, where infrastructure and resources are limited, such as unreliable internet connectivity and insufficient training.

1.3 Aims of the Research

The study aims to evaluate the impact and effectiveness of the e-GP system in Samdrup Jongkhar Dzongkhag, specifically in terms of time efficiency and transparency, and propose recommendations for improvement.

1.4 Data Collection

The main objectives of this research paper are:

1. To assess the operational efficiency and benefits of the e-GP system.
2. To identify the challenges faced by users.
3. To propose practical solutions to address identified gaps and enhance the systems efficiency and functionality.

1.5 Significance of Research

The research seeks to find gaps and weaknesses to enhance Bhutans procurement efficiency and accountability. Therefore, the developed project functions as an essential reference tool that allows policymakers to grasp e-GP system implementation implications and create optimization strategies. The project supports procurement professionals through the presentation of effective strategies and solutions for managing implementation difficulties. The study will create a basis for upcoming academic investigations concerning e-GP systems, especially in developing economic settings. Furthermore, it improves education for students, learning materials, and procurement management by teaching them about digital procurement systems and their effects on governance.

2 Literature Review

The construction industry increasingly employs Information and Communication Technologies (ICT) to improve procurement and supply chain management. Among these, e-procurement automates procurement tasks through web-based platforms, reducing errors, enhancing transparency, and fostering collaboration (Gurgun et al., 2024; Koc et al., 2024). Despite these benefits, adoption remains limited due to high implementation costs, project-specific complexities, and organizational resistance to change (Arditi et al., 2024).

Standardization is challenging since each construction project involves unique designs, materials, and stakeholders (Gurgun et al., 2024). Additionally, experienced professionals often resist transitioning from traditional methods, fearing disruption of established networks (Atabay et al., 2024). For successful implementation, barriers such as trust, collaboration, and flexibility mechanisms must be addressed, particularly for small firms that struggle with resources, security concerns, and vendor-related risks. In the public sector, transparency in procurement is vital for accountability and reducing corruption. However, trust in governance remains low, as reflected by the Corruption Perception Index, where two-thirds of 180 countries score below 50 (Hochstetter et al., 2023). Governments have increasingly adopted e-government systems to strengthen transparency, supplier relations, and citizen engagement (Bustamante et al., 2023; Dieguez et al., 2023). These systems align with the UNs 2030 Agenda, emphasizing transparent institutions for sustainable development (UN, 2015). Yet, challenges persist, including limited technical skills, internal resistance, weak digital infrastructure, and corruption risks (Vásquez et al., 2023). Digital systems can combat corruption, but they may also enable new risks such as bid-rigging algorithms and unauthorized data access (Gómez, 2023). Successful adoption thus requires not only technology but also cultural change, capacity building, and institutional reforms (Martinez, 2023).

Electronic government procurement (e-GP) is widely recognized as best practice for transparency, efficiency, and accountability (Mohungoo, Lee, Chung, 2022). Nevertheless, barriers such as complex interfaces, high costs, lack of ICT skills, and supplier registration difficulties hinder adoption. Small suppliers particularly struggle with costly digital signatures and usability issues (Mohungoo et al., 2022). Moreover, existing studies often overlook the critical role of government leadership, mobile-based digital signatures, and supportive legal frameworks. Financial constraints, data protection risks, and unclear regulations remain decisive factors for successful implementation (Martinez, 2023).

Regional studies highlight diverse experiences. In Africa, adoption is constrained by poor infrastructure and resistance, requiring stronger government support (Asare et al., 2007). In the Asia-Pacific, alignment with national development plans and legal frameworks is critical (Sharif, 2009). South Africa emphasizes political backing and training (Malinga, 2009), while the U.S. model highlights accessibility and efficiency (Drabkin, 2009). Despite these insights, private sector engagement and financial sustainability of e-procurement platforms are often overlooked, particularly in low-income countries (Smith Patel, 2021).

From the supplier perspective, e-procurement offers cost reduction, transparency, and stronger buyersupplier relationships (Gunasekaran Ngai, 2008). However, adoption is hindered by high integration costs, interoperability issues, and limited institutional support (Kothari et al., 2005). Small and medium-sized enterprises (SMEs) face even greater financial and technical barriers, yet studies rarely analyze supplier adoption across industries or explore the role of government incentives (Chwelos et al., 2001). Finally, user experience (UX) strongly influences e-procurement adoption. Intuitive interfaces, ease of navigation, and searchability enhance engagement, while poor system design reduces efficiency (Hashim et al., 2022; Huang Wang, 2022; Ragin-Skorecka Hada, 2024). Security features such as encryption and digital signatures further foster trust (Nawi et al., 2017). However, research often assumes adequate digital literacy among users, overlooking varied ICT competency levels, especially in developing countries. UX improvements also entail significant costs, which can burden public institutions with limited budgets. Overall, existing research highlights both opportunities and barriers in e-procurement adoption. While efficiency, transparency, and accountability are well-documented benefits, persistent challengesranging from technical complexity and financial limitations to cultural resistance and weak governancedemand further investigation. Future research should emphasize policy frameworks, private sector engagement, and costbenefit analysis to support sustainable adoption in diverse contexts.

3 Methodology

3.1 Research Design

This study adopts a descriptive research design to examine the effects of the Electronic Government Procurement (e-GP) system in Samdrup Jongkhar Dzongkhag. The design is appropriate for systematically describing user experiences, behaviors, and perceptions of procurement efficiency and transparency without manipulating variables.

3.2 Sampling Method

The study population consisted of 80 active e-GP users drawn from five key stakeholder groups in Samdrup Jongkhar: Dzongkhag Administration, Thromde, Gewogs, Bidders, and Jigme Namgyel Engineering College. Using Cochrans formula with finite population correction, a representative sample size of 66 was determined. Proportional allocation was applied to ensure balanced representation across the stakeholder groups.

3.3 Response Rate

Out of the 66 targeted respondents, 61 valid responses were obtained, yielding a response rate of 92%. While a few participants were unable to complete the survey, the responses collected represent diverse stakeholders, ensuring adequate reliability of the findings.

3.4 Data Collection

Data was collected through a structured online survey using Google Forms. The questionnaire had two sections: perception-based questions using a five-point Likert scale and experience-based questions using a five-point frequency scale. A pilot test with five participants helped refine the questionnaire for clarity and consistency before final distribution.

3.5 Data Analysis

Survey responses were analyzed using Microsoft Excel. Descriptive statistics such as frequencies, percentages, and mean scores were used to interpret the data. This approach was considered sufficient for identifying trends and summarizing the overall performance of the e-GP system from the users perspective.

4 Results

Based on response analysis, several key findings emerged. Most respondents agreed that the e-GP system has improved time efficiency in procurement processes. Many also noted that the system increased transparency, especially through digital traceability of tenders and the publication of contract awards. However, issues such as limited training, inadequate technical support, and occasional system malfunctions were often reported. While many users found the platform sufficient for procurement needs, a significant number believed that further improvements in usability and system features are necessary.

Table 1: Perceptions on Time Efficiency of e-GP

Survey Response Summary						
Statement	**SD (1)**	**D (2)**	**N (3)**	**A (4)**	**SA (5)**	**Mean**
1. The e-GP system has significantly reduced the time required for procurement processes	1	9	7	16	28	4.00
2. The system is easy to navigate, minimizing delays in tender submission	4	7	12	18	20	3.70
3. The e-GP system has reduced the time spent correcting manual errors	3	4	11	13	30	4.03
4. The system has improved transparency, reducing unnecessary delays in approvals	3	3	10	16	29	4.07
5. The e-GP system allows for faster communication and decision-making among stakeholders	3	7	9	14	28	3.93
6. Adequate training has been provided to users of the e-GP system	15	14	14	6	12	2.77
7. Procurement officers and bidders have received adequate training, reducing delays in system usage	10	10	17	15	9	3.05
8. Technical issues in the e-GP system are resolved quickly to prevent disruptions in procurement timelines	5	13	25	10	8	3.05
9. The execution of e-GP has reduced the lead time for procurement activities	1	9	14	17	20	3.75
10. The current features of the e-GP system are sufficient to ensure efficient and timely procurement	2	10	14	18	17	3.62

The results show that respondents generally agree that the e-GP system improves time efficiency, mainly by reducing manual errors (M = 4.03), speeding up approvals (M = 4.07), and shortening

procurement processes (M = 4.00). The system is also viewed as facilitating faster communication and decision-making (M = 3.93). This finding complements Gurgun et al. (2024), who noted that e-procurement fosters collaboration, and aligns with Gunasekaran Ngai (2008), who highlighted that digital platforms strengthen buyer-supplier relationships.

On the other hand, training and technical support are seen as weak points. Respondents rated the adequacy of training the lowest (M = 2.77), with mixed opinions on bidder/officer training (M = 3.05) and timely issue resolution (M = 3.05). Overall, the findings emphasize that although e-GP is seen as a tool that saves time and boosts efficiency, its full potential is limited by insufficient training and inconsistent technical support.

5 Discussion

5.1 Strengths of the e-GP System

The e-GP system is widely perceived as having improved procurement speed and transparency. Respondents highlighted reduced lead times for tender management and faster communication among stakeholders. Digital records and open access to procurement information also strengthened accountability and fairness.

5.2 Areas That Requires Improvement

Despite these strengths, several issues were noted. A considerable number of respondents expressed dissatisfaction with the training provided, which limited the effective use of the system. Technical problems, such as difficulties in uploading documents and system errors during peak periods, disrupted procurement activities. In addition, some users found the systems interface less user-friendly, suggesting the need for design improvements and additional features tailored to procurement needs.

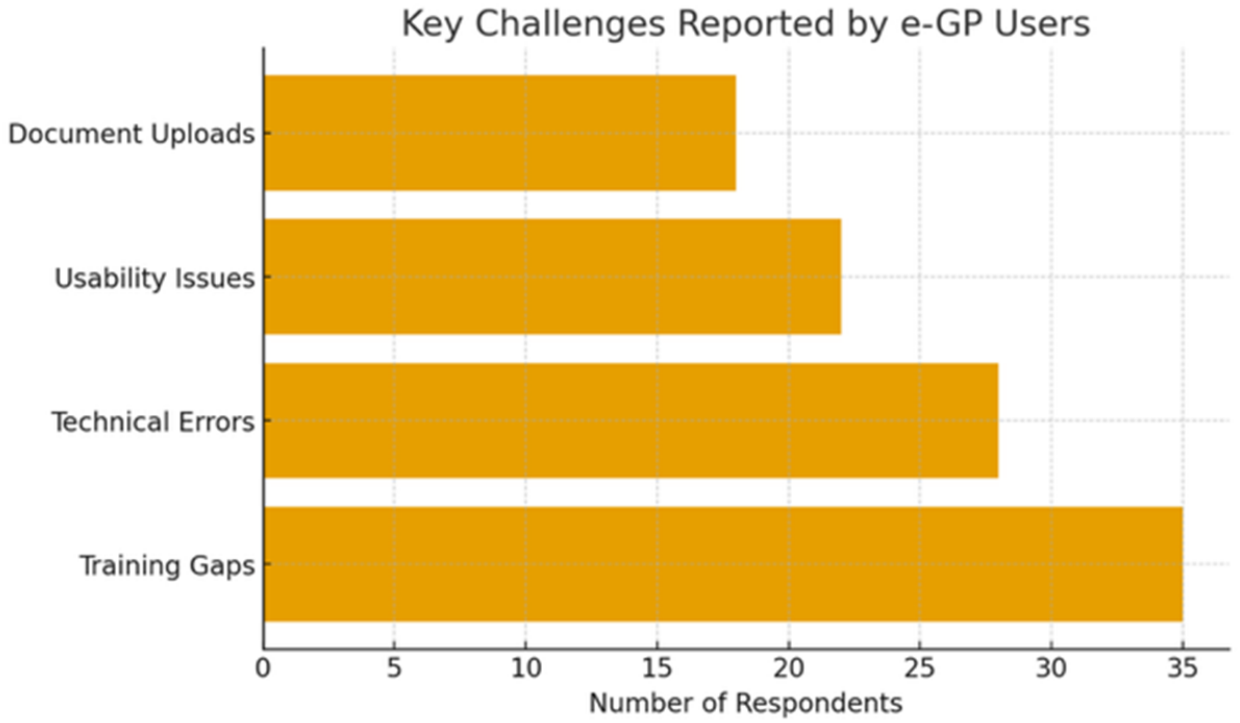

Figure 1: Key challenges reported by e-GP Users

6 Conclusion

The adoption of the e-GP system in Samdrup Jongkhar Dzongkhag has contributed positively to procurement efficiency and transparency, reflected by a high mean score of 4.07, and significantly reduced manual errors (M=4.03). However, recurring challenges such as inadequate training (M=2.77), technical problems, and system usability gaps continue to limit the full potential of the platform. For the e-GP system to achieve greater effectiveness, continuous improvement is essential.

For the e-GP system to achieve greater effectiveness, continuous improvement is essential. This includes strengthening user training, enhancing technical support, upgrading system functionalities, and incorporating user feedback in system design. By addressing these areas, the e-GP system can serve as a more reliable, transparent, and efficient procurement tool, ultimately contributing to improved governance and sustainable development in Bhutan.

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