Electronic Government Procurement (e-GP): Digital Transformation of Public Procurement - A Case Study of the Soil Resource Development Institute (SRDI), Bangladesh

By

Mohammad Moniruzzaman

Student ID: 21282036

A Dissertation submitted in partial fulfilment of the requirements for the Degree of

Masters in Procurement and Supply Management (MPSM)

BRAC Institute of Governance and Development (BIGD)

Brac University

September 2023

Declaration

I, Mohammad Moniruzzaman, solemnly declare that this study titled *"Electronic Government Procurement (e-GP): Digital Transformation of Public Procurement - A Case Study of the Soil Resource Development Institute (SRDI), Bangladesh"* is my original work, and I am the sole author of this research.

I confirm that this study has not been submitted for any other degree, and it is not currently under consideration for any academic qualification.

I grant full authorization to BRAC Institute of Governance & Development (BIGD) and BRAC University and its affiliates to lend this research to other educational institutions or individuals exclusively for the purpose of scholarly research.

Furthermore, I authorize BRAC Institute of Governance & Development (BIGD) and BRAC University to reproduce this study, either in part or in its entirety, by photocopying or any other means, upon the request of other educational institutions, for the sole purpose of academic research.

I take full responsibility for the authenticity, accuracy, and ethical conduct of this study, and I acknowledge that any citations or references used in this research have been duly acknowledged.

This declaration is made with complete honesty and integrity, and I understand the consequences of providing false information or engaging in academic misconduct.

Student's Full Name & Signature:

_____

Mohammad Moniruzzaman

Student ID: 21282036

Approval

The thesis titled "Electronic Government Procurement (e-GP): Digital Transformation of Public Procurement - A Case Study of the Soil Resource Development Institute (SRDI), Bangladesh" submitted by Mohammad Moniruzzaman, ID: 21282036 of fall 2021 has been accepted as satisfactory in partial fulfillment of the requirement for the degree of MPSM.

Examining Committee:

Supervisor:
(Member)

Mohammed Salah Uddin, MCIPS
Deputy Secretary & Procurement Consultant
ICT Division
Government of the People's Republic of Bangladesh

External Expert Examiner:
(Member)

Md. Saifur Rahman, MCIPS
Assistant Project Director
Planning Commission
Government of the People's Republic of Bangladesh

Program Coordinator:
(Member)

Mohammad Sirajul Islam
Senior Academic Coordinator
BIGD, Brac University

Departmental Head:
(Chair)

Dr. Imran Matin
Executive Director
BIGD, Brac University

Ethics Statement

Ethics Statement In order to ensure the research was conducted with honesty and transparency; as well as to avoid harming any participants, the thesis was regulated by the following ethical considerations:

● Participants were briefed regarding the nature of the research and questionnaire and their full consent were obtained before the study

● Respondents' identities have been kept confidential

● Works of other authors used in the dissertation have been acknowledged with the use of numbered referencing system

● Misinterpretation regarding the objective of the paper has been avoided

● All possible sources of conflict, affiliations and sources of funding has been declared

● All type of bias in the primary data findings has been avoided as best to the researcher's abilities

● All research related communication was conducted with honesty, integrity and transparency

Abstract

This study examines e-GP's impact on SRDI procurement, assessing benefits, challenges, and prospects using a mixed-methods approach: quantitative and qualitative insights. The survey showed that most SRDI staff had a good understanding of e-GP (83.3%) and actively participated in e-GP procurement (75%). In terms of procurement activities, 50% procurement personnel gave opinion for less than 50 procurement done in Soil Resource Development Institute (SRDI), 41.7% think 50 to 100, and 8.3% managed over 100 activities annually. The average cost of a single procurement activity was estimated to be 25-50 lakh BDT (41.7%).The study revealed some of e-GP's benefits: such as increased transparency, improved efficiency (75%), enhanced accountability (91.7%), reduced paperwork (91.7%), and better access to suppliers (91.7%) in SRDI. Challenges included internet connectivity issues (50%), technical problems (75%), and lack of training and support (100%). Adequate change management programs and enhanced training are recommended to address these challenges.

The study's t-test showed a significant difference ($p = 0.015$) in Completion time between manual and e-GP systems. The e-GP system (mean 23.4 days) was much faster in tender evaluation compared to the manual system (mean 45.8 days), highlighting its efficiency. The study recommends a change management program for a smooth e-GP transition, CPTU server upgrade for better speed, addressing connectivity issues, and improving cyber-security. Comprehensive training for contractors and SRDI personnel, along with enhanced stakeholder engagement, is vital. In conclusion, e-GP positively impacts procurement, but addressing challenges is crucial for optimal utilization. Implementing recommendations enhances SRDI's practices and objectives.

Keywords: Electronic Government Procurement, (e-GP), procurement practices, Soil Resource Development Institute, (SRDI) mixed-methods, survey, benefits, challenges, future prospects.

Dedicated to

My father late Mohammad Aynul Hoque

&

Mother Mrs. Monoara Begum

Acknowledgement

At first, I want to express gratitude to Almighty Allah for whose assistance I have been able to prepare this dissertation. I would like to express gratitude to my supervisor who helped me to prepare this dissertation properly. It would be difficult to prepare this dissertation if he didn't give me sufficient time. His contribution was very much inspirational to me. I also want to thank all the officials of Soil Resource Development Institute, Dhaka for giving me all kinds of primary and secondary data and supports.

Table of Contents

List of figures

List of tables

List of Acronyms

e-GP	Electronic Government Procurement
PE	Procuring Entity
SRDI	Soil Resource Development Institute
SO	Scientific Officer
SSO	Senior Scientific Officer
PSO	Principal Scientific Officer
CSO	Chief Scientific Officer
CPTU	Central Procurement Technical Unit
PWD	Public Works Department
MoA	Ministry of Agriculture
ICT	Information and Communication Technology

Chapter-I: Introduction

1.1 Background

Public procurement plays a vital role in government operations, involving the acquisition of goods, works, and services to meet the needs of public organizations. Traditionally, public procurement processes have been manual, time-consuming, and susceptible to inefficiencies, delays, and corruption. However, with the rapid advancement of information and communication technologies (ICT), the digital transformation of public procurement has emerged as a powerful solution to address these challenges.

Electronic Government Procurement (e-GP) refers to the use of ICT, particularly the internet, to streamline and automate various stages of the public procurement process. It aims to enhance transparency, efficiency, and effectiveness in public procurement, ultimately leading to cost savings, improved governance, and better service delivery. By adopting e-GP systems, governments can harness the benefits of digitalization and leverage technology to transform their procurement operations. The Soil Resource Development Institute (SRDI), as a public organization responsible for soil resource management, recognizes the potential of e-GP in improving its procurement practices. By transitioning from traditional manual methods to an e-GP system, the SRDI seeks to revolutionize its procurement processes, enhance transparency, promote competition, and optimize resource allocation.

1.2 Importance of the study

This study focuses on examining the implementation of e-GP as a digital transformation initiative within the SRDI. By conducting a detailed case study, the research aims to evaluate the benefits, challenges, and outcomes associated with the adoption of e-GP in the context of a public organization like SRDI. This study's findings can give valuable insights and lessons to other government agencies who are contemplating or undergoing similar digital transformations in their procurement practices.

Key areas of investigation include the extent to which the e-GP system has streamlined procurement processes, improved efficiency in vendor selection, enhanced transparency and

accountability, and facilitated better supplier management. Moreover, the study will explore the challenges faced while implementing the e-GP system, such as resistance to change, data security concerns, and capacity building requirements. The research will also assess the overall

impact of e-GP on the effectiveness and performance of the SRDI's procurement operations. By shedding light on the experiences, benefits, and challenges encountered during the digital transformation of public procurement within the SRDI, the aim of this study is to provide a more comprehensive understanding of the adoption of e-GP in the public sector. The findings can assist policymakers, government agencies, and other stakeholders in effectively implementing and leveraging e-GP systems to achieve more efficient, transparent, and accountable public procurement practices.

1.3 Limitations and Scope of the Study

This study acknowledges certain limitations in terms of time, resources, and access to data. The research will focus specifically on the case of the SRDI, limiting the generalizability of findings to other organizations or sectors. However, by conducting an in-depth case study, valuable insights can be gained into the specific context of e-GP implementation within the SRDI.

1.4 Rationale of the Study

The rapid advancement of technology has significantly impacted various sectors, including government operations. In the domain of public procurement, Electronic Government Procurement (e-GP) systems have emerged as a transformative solution to modernize and optimize traditional procurement processes. The rationale behind this study lies in recognizing the potential of e-GP to revolutionize public procurement practices within the Soil Resource Development Institute (SRDI). By investigating the implementation of e-GP at SRDI, this research seeks to delve into the digital transformation of procurement procedures, exploring how e-GP can streamline processes, enhance efficiency, and promote transparency and accountability. In the context of SRDI, which plays a crucial role in sustainable resource management and agricultural development, the adoption of e-GP offers an avenue to address the challenges faced by manual procurement systems. The rationale for this study is underscored by the need to understand how e-GP can overcome the limitations of conventional procurement, leading to improved resource allocation, cost-effectiveness, and timely acquisition of goods and services. Through this examination, the research aims to identify the unique opportunities that e-GP presents for SRDI in fulfilling its mandate efficiently and effectively.

1.5 Significance of the Study

The significance of this study extends to multiple dimensions within the realm of public procurement.

Firstly, from an academic standpoint, this research contributes to the growing body of knowledge on the implementation and impact of e-GP in public organizations. By conducting an in-depth analysis of e-GP adoption at SRDI, the study can provide valuable insights into the challenges and opportunities faced during the transition to digital procurement practices.

Secondly, from a practical perspective, the findings of this study hold immense value for practitioners and policymakers involved in public procurement. Understanding the benefits and challenges associated with e-GP in SRDI can guide the development of informed strategies and policies that promote effective e-GP adoption in other government institutions. Policymakers can draw lessons from SRDI's experiences to ensure a smooth and successful implementation of e-GP across the broader public sector, ultimately leading to improved governance and service delivery.

Moreover, the significance of this study lies in its potential to enhance procurement practices within SRDI. By uncovering the impact of e-GP on procurement efficiency, transparency, and accountability, SRDI can identify areas for improvement and optimize its procurement procedures. The insights gained from this research can inform decision-making processes within the institute, facilitating evidence-based actions that contribute to its overarching objectives.

In conclusion, the rationale behind this study centers on the transformative potential of e-GP in revolutionizing public procurement practices within SRDI. The significance of exploring this digital transformation lies in its ability to drive operational efficiency, transparency, and accountability. By shedding light on the benefits and challenges associated with e-GP adoption, this research can guide policymakers and practitioners in harnessing the full potential of e-GP to optimize procurement processes and achieve better outcomes for the organization and its stakeholders.

Chapter-II: Research Questions

To guide the study, the following research questions will be addressed:

1. How the implementation of e-GP transformed the procurement processes in SRDI?
2. What are the benefits and challenges that come with adopting the e-GP in the SRDI context?
3. What is the level of satisfaction among SRDI procurement personnel with the e-GP system's impact on procurement efficiency and transparency?
4. How does time taken for completing procurement activities using the e-GP system compared to the traditional manual procurement process?
5. What are the perceptions of SRDI procurement personnel regarding the prospects of the e-GP system in achieving the institute's procurement objectives?

2.1 Research Objectives

The main objectives of this study are as follows:

2.2 General Objectives

1. To evaluate the impact of e-GP implementation on the efficiency and effectiveness of the procurement processes in SRDI.

2.3 Specific Objectives

1. To measure the satisfaction of SRDI personnel regarding the impact of e-GP on efficiency and transparency.
2. To Compare the length of the procurement between the electronic e-GP and the manual process.
3. To identify the benefits and challenges experienced while adopting the e-GP in SRDI.

By addressing these research questions and objectives, the aim of this study is to provide a better understanding of the adoption of e-GP in public procurement and provide practical insights for organizations embarking on similar digital transformation journeys.

The field of procurement has witnessed significant development over the years, with governments playing a crucial role in shaping procurement practices. The focus has shifted towards promoting transparency, fairness, and efficiency in the procurement process to ensure optimal utilization of public financial resources and deliver value to citizens.

Efforts to combat corruption and promote efficiency in the public sector procurement have been a major concern in various countries. Studies by [1] Di Tella (2003) and [2] Khwaja & Miah (2005) highlighted the impact of disciplinary actions on corruption in Argentina and the influence of political connections on borrowing and defaults in firms. [3] Faccio (2006) identified the prevalence of politically linked firms in highly corrupt countries, emphasizing the need for combating corruption in procurement.

In the case of Bangladesh, the procurement system was once riddled with inefficiencies, leading to economic losses estimated at over 1.5% GDP growth per year. [4] However, the government made significant strides in reforming the procurement system, introducing the Public Procurement Act and Rules, as well as adopting e-GP systems and citizen engagement programs. This reform effort led to marginalizing corruption in the contracting process and achieving more transparent and competitive procurement.

The advent of e-commerce and digitization brought significant changes to procurement practices globally, and Bangladesh was no exception. The country embraced e-GP to improve efficiency, fairness, and transparency in procurement processes. [5] However, implementing e-procurement came with its challenges. Lack of adequate resources, infrastructure, and technological expertise hindered the widespread adoption of e-GP. [6] [7]

Numerous studies have examined the benefits of e-Procurement, such as cost reductions, improved control over maverick spending, enhanced compliance, and increased transparency [8-15] .The successful implementation of e-Procurement has also led to better supply chain management, leaner inventory levels, and reduced material and service costs [16, 17] .

However, despite the benefits, e-Procurement deployment has faced challenges in various aspects. End-user resistance, lack of technological capability among suppliers, and internal barriers in organizations hindered the smooth implementation of e-Procurement initiatives [18-20] . Additionally, issues related to system integration, standardization, and supplier preparation emerged as significant challenges [21, 22] .

Bangladesh's experience with e-GP implementation also encountered obstacles. The introduction of a completely changed system was met with resistance from officials and contractors [23] .While progress has been made with 116 tenders completed under the e-GP system, challenges remain in identifying how e-GP can be applied to all procurement activities due to the unique nature of work undertaken by the Public Works Department (PWD) [23] .

In conclusion, the literature indicates that procurement has evolved significantly over time, with governments and technology playing vital roles in shaping procurement practices. e-procurement has emerged as a powerful tool to enhance efficiency, transparency, and fairness in the procurement process. However, its successful implementation requires addressing challenges related to infrastructure, resistance, system integration, and organizational readiness. Bangladesh's experience with e-GP exemplifies the potential benefits and challenges associated with adopting e-procurement systems, providing valuable insights for further improvements in procurement practices.

Chapter-III: Methodology

3.1 Methodology of this study

The methodology adopted for this study involves a mixed-methods approach, which combines both quantitative and qualitative data collection and analysis. This comprehensive approach allows for a deeper and more nuanced exploration of the impact of Electronic Government Procurement (e-GP) on procurement practices at the Soil Resource Development Institute (SRDI).

3.2 Respondents

A carefully selected group of 12 SRDI procurement personnel like Scientific Officer, Senior Scientific Officer, Principal Scientific Officer, Chief Scientific Officer and Director directly involved in procurement activities will serve as the respondents for this study. These individuals were chosen for their in-depth understanding and experience with the e-GP system, ensuring valuable insights into its implementation and utilization within the institute.

3.3 Data Collection Methods

The study will utilize both quantitative and qualitative data to capture a wide range of information related to e-GP. The primary data collection method involves a survey questionnaire distributed to the selected respondents. The questionnaire comprises structured questions to gather quantitative data on various aspects of e-GP, such as the respondents' level of experience in public procurement, their familiarity with the e-GP concept, and their knowledge level of the e-GP system. Additionally, the questionnaire includes open-ended questions to elicit qualitative insights, allowing respondents to express their opinions, experiences, and perceptions regarding e-GP's impact on procurement practices.

3.4 Data Collection Tools

To collect quantitative data, a structured survey questionnaire has been designed, covering key aspects of e-GP implementation at SRDI. The survey aims to gather information on the perceived benefits of e-GP, encountered challenges during its operation, and the overall impact of e-GP in the institute's procurement processes.

For qualitative data, open-ended questions in the survey will allow respondents to provide detailed responses, offering valuable qualitative insights. These qualitative data provide a more

comprehensive understanding of the complex factors influencing e-GP adoption and its effects on SRDI's procurement practices.

3.5 Data Analysis

The collected data, both quantitative and qualitative, will be subjected to rigorous analysis. Descriptive statistical methods will be employed to summarize and present the quantitative data, providing a clear overview of respondents' perspectives on e-GP.

Furthermore, qualitative data obtained from the open-ended questions will undergo thematic or sentiment analysis to identify recurring themes, patterns, and insights regarding the benefits, challenges, and overall impact of e-GP at SRDI. Here, we'll use word cloud to visualize the text data. A word cloud involves several straightforward steps. First, we'll gather the text data from open-ended questions, such as the recommendations provided by SRDI staff. Next, we'll preprocess the text by removing any unnecessary elements like punctuation, numbers and stop words. Then, we'll use R programming language and some R packages to process the text data and the using the processed text data and adjusting parameters like font size, color scheme, and layout. We will process the text and generate a word cloud where words appear larger and bolder based on their frequency in the text data. [25] This visually engaging representation provides quick insights into the most common sentiments or themes expressed within the recommendations, helping to summarize and communicate the key points effectively.

3.6 Comparison

To establish a comprehensive comparison the study is conducted a t-test, the study is also collected tender data related to both manual and e-GP systems from SRDI records. By analyzing past procurement activities and their respective completion times under both systems, the study aims to assess the efficiency and effectiveness of e-GP in comparison to traditional manual procurement processes.

3.7 Sample Size and Validity

The sample size of 16 tender records has been determined using appropriate formulas to ensure a statistically valid and robust sample. The study's mixed-methods approach enhances the validity and reliability of the findings by triangulating both quantitative and qualitative data.

3.8 Conclusion

By employing this comprehensive mixed-methods approach, this study aims to contribute valuable empirical evidence to the field of e-GP implementation in government institutions, focusing on SRDI. The findings of this research can serve as a foundation for evidence-based decision-making, guide policy formulations, and identify opportunities for further optimization in SRDI's procurement practices through digital transformation.

3.9 Sample size calculation for Comparison

Sample size for hypothesis testing of the difference between two means will be determine by following formula. [24]

$$\boldsymbol{n = \frac{(Z_{\alpha/2} + Z_{\beta})^2 \, (\sigma_1^2 + \sigma_2^2)}{(\mu_1 - \mu_2)^2}}$$

Here,

$n =$ Sample Size

$Z_{\alpha/2} = 1.96$ [5% $level\ of\ significance$, (two − tailed test)]

$Z_{\beta} = 0.842$ [80% $power$]

$\mu_1 = Mean\ of\ manual\ procurement$

$\mu_2 = Mean\ of\ e - GP$

$\sigma_1 = Standard\ deviation\ (SD)\ of\ manual\ procurement$

$\sigma_2 = Standard\ deviation\ (SD)\ of\ e - GP$

$$\boldsymbol{n = \frac{(1.96 + 0.842)^2 \, \{(45.8)^2 + (23.4)^2\}}{(22.5 - 7.16)^{\ 2}}}$$

$$\boldsymbol{n = \frac{4376.37}{501.76} = 8.722 \approx 8}$$

Here,

$\mu_1 = 45.8$

$\mu_2 = 23.4$

$\sigma_1 = 22.5$

$\sigma_2 = 7.16$

3.10 Sample size

After performing the calculations, it is determined that a minimum sample size of 8 for each group.

3.11 Results

Analysis of the Survey responses

The "Designation" chart shows responses from 12 SRDI procurement personnel who participated in the e-GP implementation survey. Most respondents were "Senior Scientific Officers" (50%), followed by "Principal Scientific Officers" (25%). Other designations included "Chief Scientific Officer (Retired)," "Project Director," and "Director (PRL)" each representing 8.33% of responses.

Figure 1: Distribution of designation

The chart's diversity indicates various roles within SRDI, adding credibility to the study. Senior officers' participation provides valuable insights into e-GP's impact on procurement practices within the institute. The data enhances the study's validity and supports more in-depth analysis and interpretation in subsequent sections.

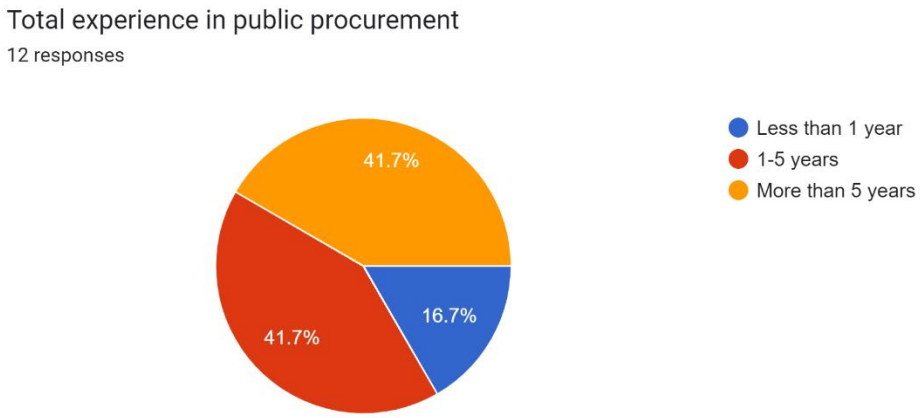


Figure 2: Total Experience in public procurement

The "Total Experience in Public Procurement" chart reveals valuable insights from the 12 SRDI procurement personnel participating in the e-GP implementation survey. 41.7% of respondents have 1 to 5 years of experience, indicating a significant portion with moderate expertise in public procurement. Another 41.7% possess more than 5 years of experience, offering insights from seasoned professionals with extensive knowledge in procurement. 16.7% have less than 1 year of experience, providing perspectives from newer entrants to the field.

The diverse distribution of experience levels enhances the study's credibility and relevance, presenting a comprehensive view of e-GP's impact on SRDI's procurement practices. The chart's visual presentation adds clarity and supports further analysis and interpretation of the survey results.

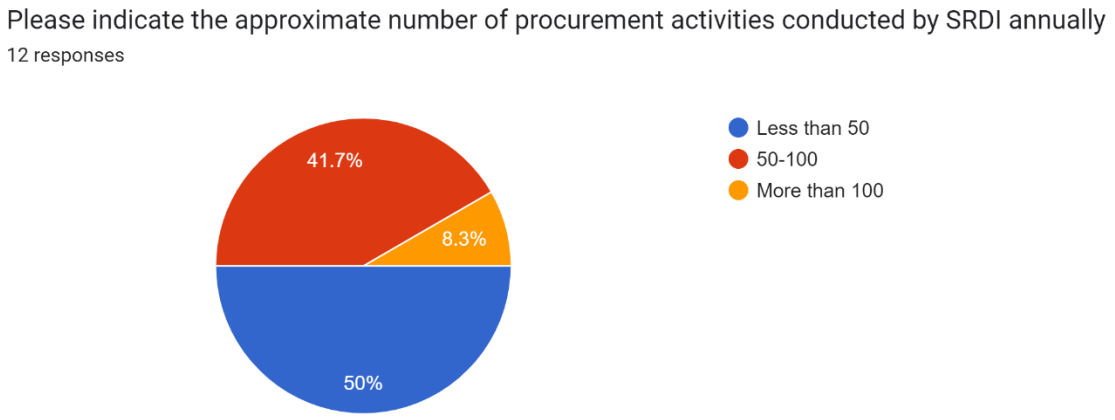


Figure 3: Number of procurement activities conducted by SRDI (annually)

The "Approximate Number of Procurement Activities Conducted by SRDI Annually" chart offers insights into the frequency of procurement activities at SRDI.

50% of respondents reported less than 50 procurement activities per year, indicating a significant portion of smaller-scale operations. 41.7% stated SRDI conducts 50 to 100 procurement activities annually, highlighting a considerable volume of well-functioning procurement.

8.3% engage in over 100 procurement activities, representing a subset of significant procurement operations.

The chart's clear representation enhances understanding of SRDI's procurement scale and scope. It enriches the study's findings, providing context on how e-GP implementation may impact procurement practices within SRDI based on activity volume.

The "Average Estimated Cost for Any Single Procurement Activity in SRDI (Excluding Special Project Works)" chart presents data on the costs of individual procurement activities at SRDI.

33.3% of respondents reported costs below 25 lakh BDT, indicating a significant proportion of smaller scale activities

41.7% stated average costs between 25 to 50 lakh BDT, representing moderate-scale procurement.

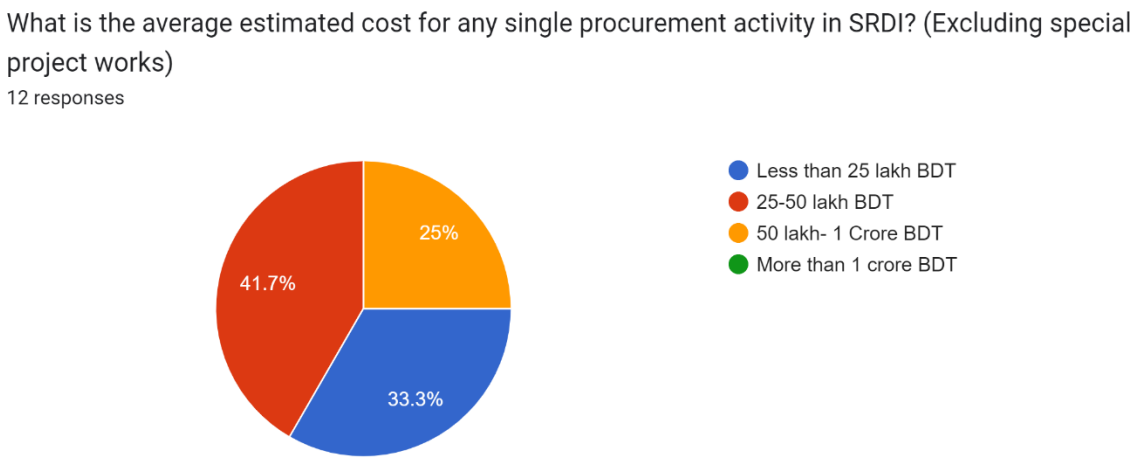


Figure 4: Average cost of a single procurement

.

25% indicated costs ranging from 50 lakh to 1 crore BDT, highlighting higher-value activities.

No respondents reported procurement activities exceeding 1 crore BDT, suggesting no extremely high-value purchases.

The chart's descriptive statistics visually showcase cost distribution, providing valuable insights into SRDI's procurement scale and financial diversity. This data aids in understanding how e-GP implementation may impact budget management and financial efficiency within the institute.

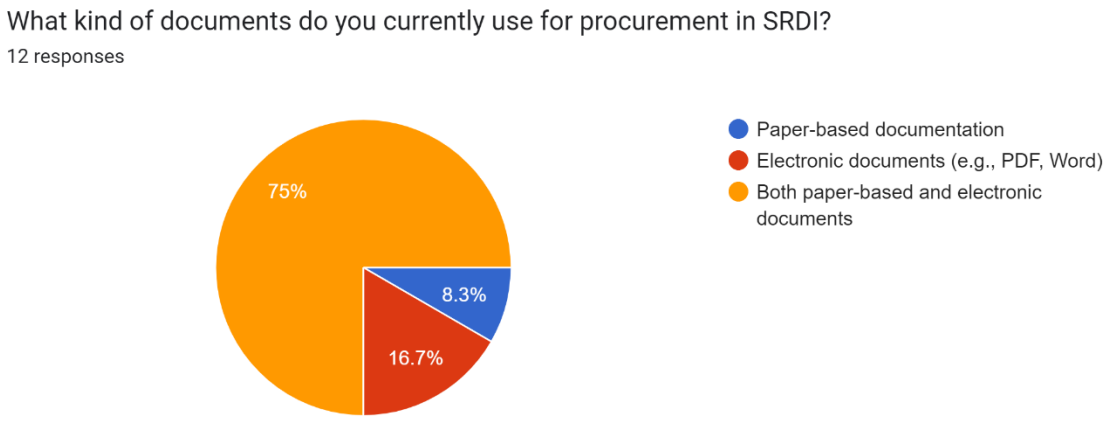


Figure 5: Distribution of document types

The "Documents Currently Used for Procurement in SRDI" chart offers insights into document practices at SRDI.

8.3% use solely paper-based documentation, indicating a small reliance on traditional methods.

16.7% utilize electronic documents like PDF or Word formats, showing a moderate shift towards digitalization.

75% employ both paper-based and electronic documents, revealing a substantial majority embracing a hybrid approach.

Descriptive statistics provide a clear picture of SRDI's current document management practices. The high percentage of the hybrid approach indicates an ongoing transition towards digitalization, potentially leading to improved efficiency and transparency.

The chart's data highlights SRDI's readiness for e-GP implementation and identifies areas for further training or support to ensure a smooth transition to a more digitalized procurement environment.

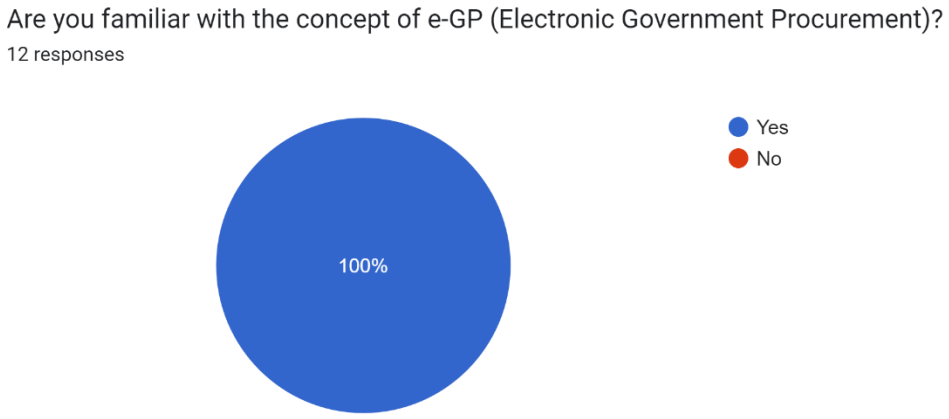


Figure 6: Familiarity with e-GP

The "Familiarity with e-GP Concept" chart illustrates that 100% of respondents at SRDI are familiar with Electronic Government Procurement (e-GP).

This significant finding indicates a complete awareness of e-GP among the surveyed SRDI staff involved in procurement activities. The high level of awareness demonstrates that prior training and internal communications have effectively educated staff about the e-GP system.

The unanimous familiarity with e-GP bodes well for successful implementation and adoption within SRDI.

With all respondents expressing familiarity, a conducive environment for the forthcoming changes in procurement practices is established. Overall, the chart showcases positive readiness for e-GP implementation, setting a favorable trajectory for SRDI's digital transformation in public procurement.

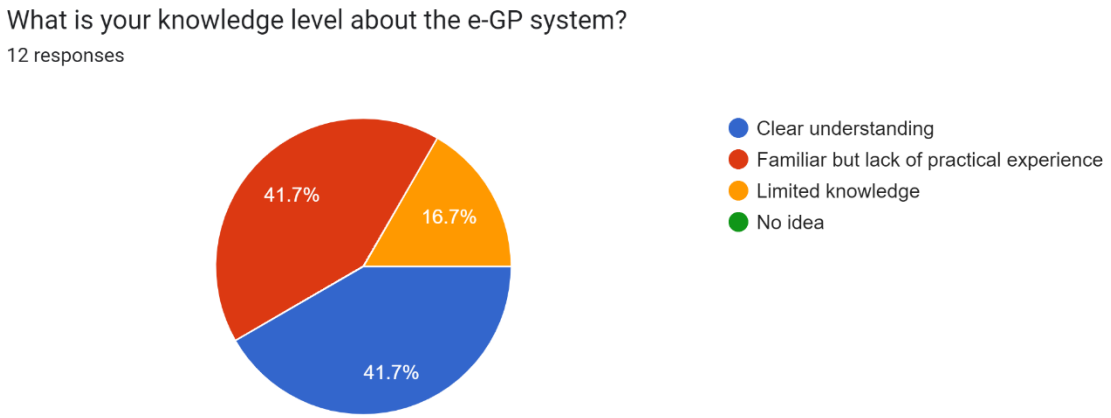


Figure 7: Knowledge about e-GP

The "Knowledge Level about e-GP System" chart visually represents respondents' self-assessed understanding of the e-GP system at SRDI.

Approximately 41.7% of respondents reported having a clear understanding of e-GP, indicating a significant portion with comprehensive knowledge of the system.

An equal proportion (41.7%) expressed familiarity with e-GP but lack practical experience, suggesting theoretical knowledge without hands-on use.

Furthermore, 16.7% reported limited knowledge about e-GP, representing a smaller group with some awareness but limited understanding.

Remarkably, none of the respondents indicated having no idea about e-GP, indicating that all staff possess some level of knowledge.

The distribution of responses highlights the diversity of expertise among SRDI staff, suggesting targeted training programs can bridge gaps in knowledge.

Overall, the data indicates a substantial portion of knowledgeable staff, providing a solid foundation for successful e-GP implementation.

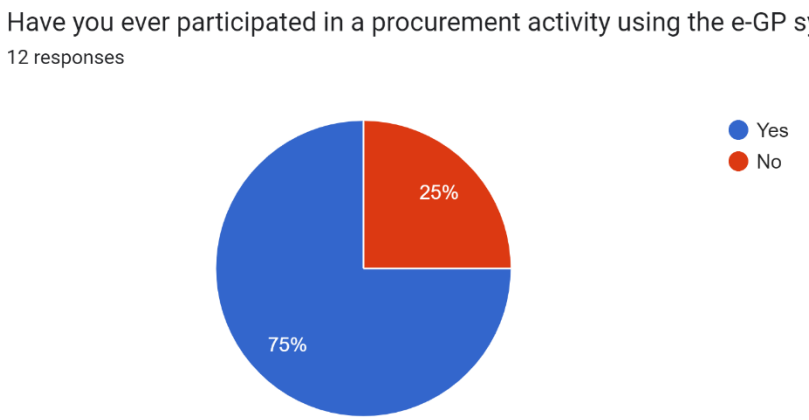


Figure 8: Percentage of Usage of e-GP

The "Participation in e-GP Procurement Activities" chart depicts responses from SRDI staff regarding their involvement in e-GP procurement.

Approximately 75% of respondents have participated in e-GP procurement activities, indicating a significant majority with practical experience using the system.

Conversely, 25% reported not having engaged in e-GP procurement, suggesting a smaller proportion yet to use the platform.

The chart's distribution reflects varying levels of hands-on experience with e-GP among SRDI staff.

The high percentage of participants demonstrates successful e-GP implementation and integration into procurement practices.

For those who haven't participated, targeted training can familiarize them with the system, ensuring all staff are well-equipped.

Overall, the chart reveals positive progress in e-GP adoption at SRDI, with most staff actively using the digital system for procurement activities.

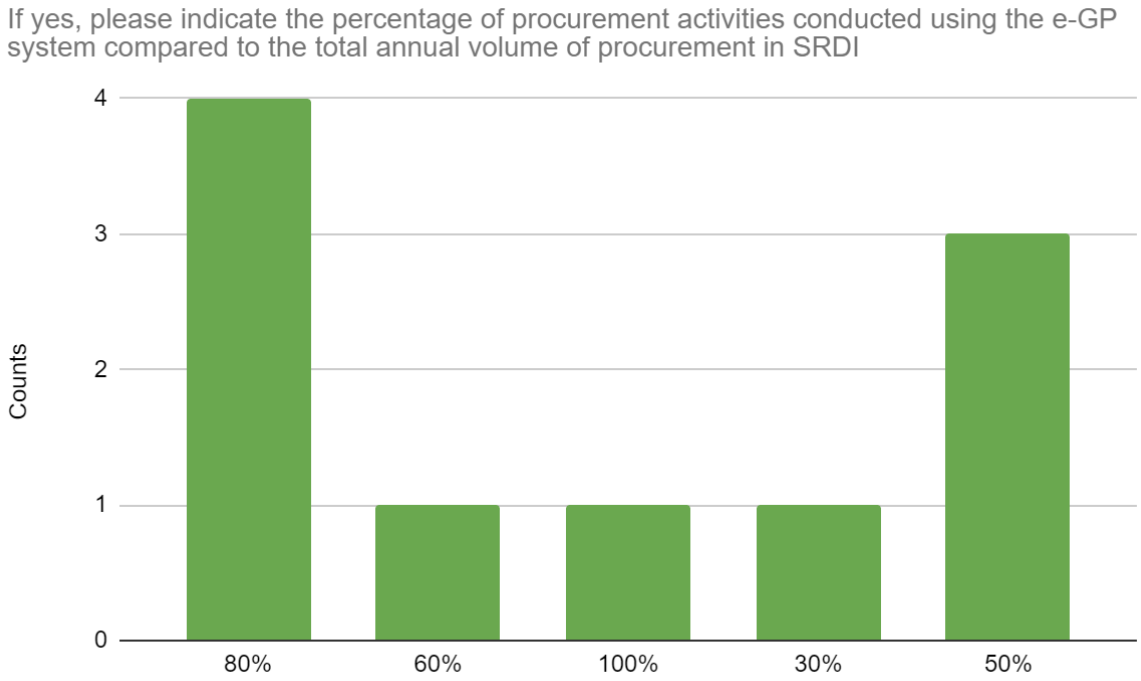


Figure 9: Percentage of Usage of e-GP

The chart titled "Percentage of Procurement Activities Conducted Using e-GP System" presents the distribution of responses from SRDI procurement personnel who have participated in procurement activities using the e-GP system. The chart provides insights into the percentage of procurement activities conducted using e-GP compared to the total annual volume of procurement in SRDI.

1. 80%: The most frequent response indicates that 80% of the respondents who have used the e-GP system reported conducting 80% of their procurement activities through this electronic platform. This finding suggests a significant adoption and reliance on the e-GP system for most of the procurement processes within SRDI.
2. 60%: One respondent reported conducting 60% of their procurement activities using the e-GP system. This response reflects a relatively lower utilization rate compared to the majority but still indicates a significant reliance on the electronic platform for procurement.
3. 100%: One staff member reported conducting all their procurement activities, equivalent to 100%, through the e-GP system. This response indicates complete adoption and exclusivity in utilizing the e-GP platform for procurement processes.

4. 30%: Another respondent indicated that 30% of their procurement activities are conducted using the e-GP system. This response suggests a partial adoption of the e-GP system for procurement within their scope of responsibilities.
5. 50%: Three respondents reported conducting 50% of their procurement activities using the e-GP system. This finding indicates an equal distribution of procurement activities between the e-GP system and other methods.

Overall, the chart illustrates that a substantial number of SRDI procurement personnel who have experience with the e-GP system rely heavily on this electronic platform for conducting procurement activities. It also highlights the diversity in responses, indicating varying degrees of adoption and utilization of the e-GP system among the survey participants. These findings contribute valuable insights into the extent of e-GP implementation within SRDI and its impact on procurement practices.

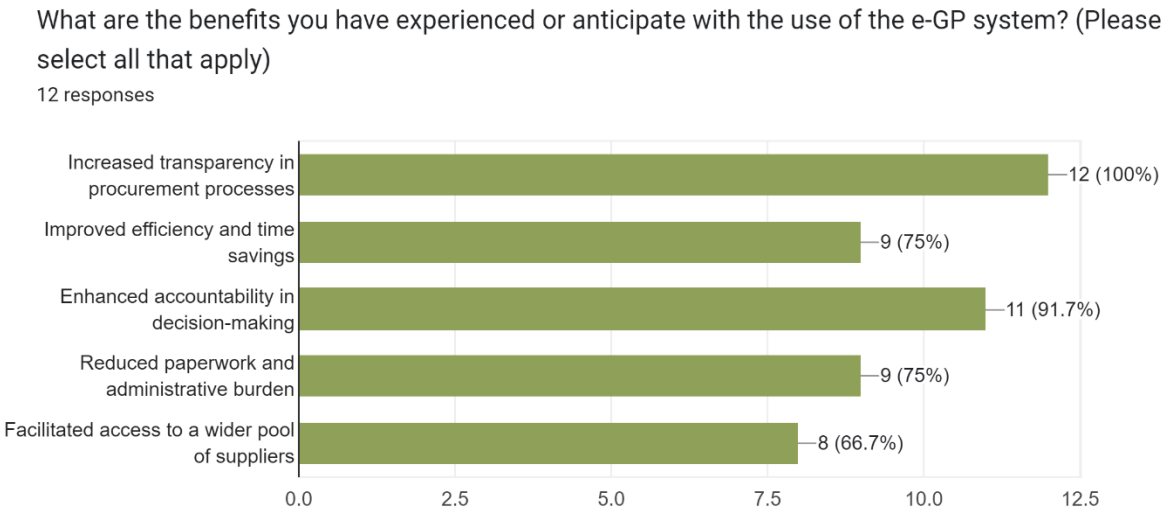


Figure 10: Benefits of e-GP

In the results section, the chart titled "Benefits of Using e-GP System" presents the responses of SRDI procurement personnel regarding the benefits they have experienced or anticipate with the use of the e-GP system. The chart displays the percentage of respondents who selected each benefit, offering insights into the perceived advantages of adopting the e-GP system for procurement processes.

1. Increased transparency in procurement processes: This benefit was selected by all 12 respondents, representing 100% of the participants. The unanimous agreement on this advantage indicates that the e-GP system has successfully enhanced transparency in procurement activities within SRDI. The system likely provides clear visibility into the entire procurement process, promoting fairness and integrity.
2. Improved efficiency and time savings: Nine respondents, accounting for 75% of the total participants, reported experiencing improved efficiency and time savings with the e-GP system. This finding suggests that the electronic platform streamlines procurement procedures, leading to quicker and more efficient processing of procurement activities.
3. Enhanced accountability in decision-making: Eleven respondents, representing 91.7% of the participants, identified enhanced accountability in decision-making as a benefit of using the e-GP system. The majority agreement on this advantage suggests that the system has cultivated a sense of accountability and traceability in the decision-making process ensuring that procurement decisions are well-documented and justified.
4. Reduced paperwork and administrative burden: Similarly, 11 respondents (91.7%) acknowledged that the e-GP system has reduced paperwork and administrative burden. This benefit indicates that the electronic platform has minimized manual paperwork, which can be time-consuming, and has automated various administrative tasks related to procurement.
5. Facilitated access to a wider pool of suppliers: Eleven respondents (91.7%) also recognized that the e-GP system has facilitated access to a wider pool of suppliers. This finding suggests that the electronic platform has expanded the reach of SRDI's procurement activities, allowing the institute to engage with a more diverse and competitive supplier base.

Overall, the chart illustrates that the adoption of the e-GP system in SRDI has been associated with several benefits, as indicated by the positive responses from the survey participants. The overwhelming agreement on increased transparency and the high percentage of respondents acknowledging improved efficiency, enhanced accountability, reduced paperwork, and wider supplier access demonstrate the system's positive impact on procurement practices within SRDI. These insights are valuable for understanding the advantages of digital transformation through the e-GP system and its potential implications for public procurement in the institute.

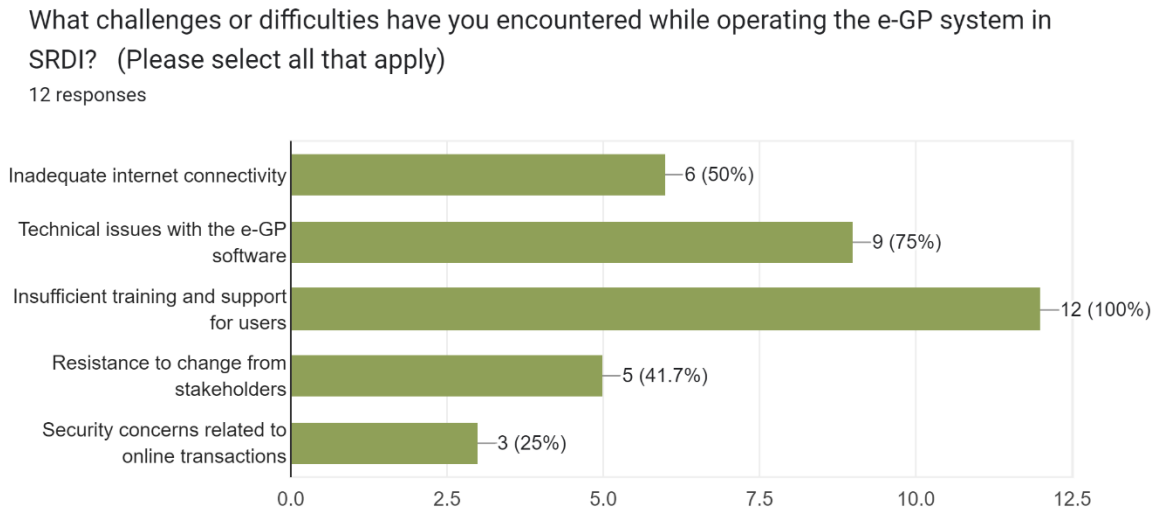


Figure 11: Difficulties encountered while operating the e-GP system.

In the results section, the chart titled "Challenges Encountered in Operating e-GP System" presents the responses of SRDI procurement personnels regarding the challenges or difficulties they have faced while operating the e-GP system. The chart displays the percentage of respondents who selected each challenge, offering insights into the obstacles that have been encountered in the implementation of the e-GP system for procurement processes.

1. Inadequate internet connectivity: Six respondents, accounting for 50% of the total participants, reported facing challenges with inadequate internet connectivity while operating the e-GP system. This finding indicates that the availability and stability of internet connections have sometimes affected the smooth functioning of the system, leading to potential disruptions in procurement activities.
2. Technical issues with the e-GP software: Nine respondents (75%) identified technical issues with the e-GP software as a challenge they have encountered. This suggests that certain software-related problems have arisen during the operation of the e-GP system, which might have required troubleshooting and technical support.
3. Insufficient training and support for users: All 12 respondents (100%) highlighted the challenge of insufficient training and support for users while operating the e-GP system. The unanimous agreement on this challenge indicates that a lack of adequate training and support resources may have hindered the staff's proficiency in using the e-GP system effectively.

4. Resistance to change from stakeholders: Five respondents (41.7%) reported experiencing resistance to change from stakeholders during the implementation of the e-GP system. This finding suggests that some individuals or groups within SRDI may have been hesitant or reluctant to embrace the digital transformation of procurement processes.
5. Security concerns related to online transactions: Three respondents (25%) acknowledged security concerns related to online transactions as a challenge while operating the e-GP system. This implies that apprehensions regarding the security and confidentiality of online transactions may have influenced procurement personnel' perception of the system's reliability.

Overall, the chart illustrates that the adoption of the e-GP system in SRDI has been accompanied by several challenges, as indicated by the responses from the survey participants. Inadequate internet connectivity and technical issues with the e-GP software emerged as significant challenges, affecting half or more of the respondents. Moreover, the unanimous agreement on insufficient training and support for users highlights the critical importance of providing comprehensive training and assistance to procurement personnel to optimize the benefits of the e-GP system.

Additionally, the presence of resistance to change and security concerns indicates the need for effective change management strategies and robust security measures to address staff apprehensions and ensure the successful integration of the e-GP system into SRDI's procurement practices. These insights are valuable for understanding the potential obstacles and areas of improvement in the utilization of the e-GP system for procurement activities within SRDI.

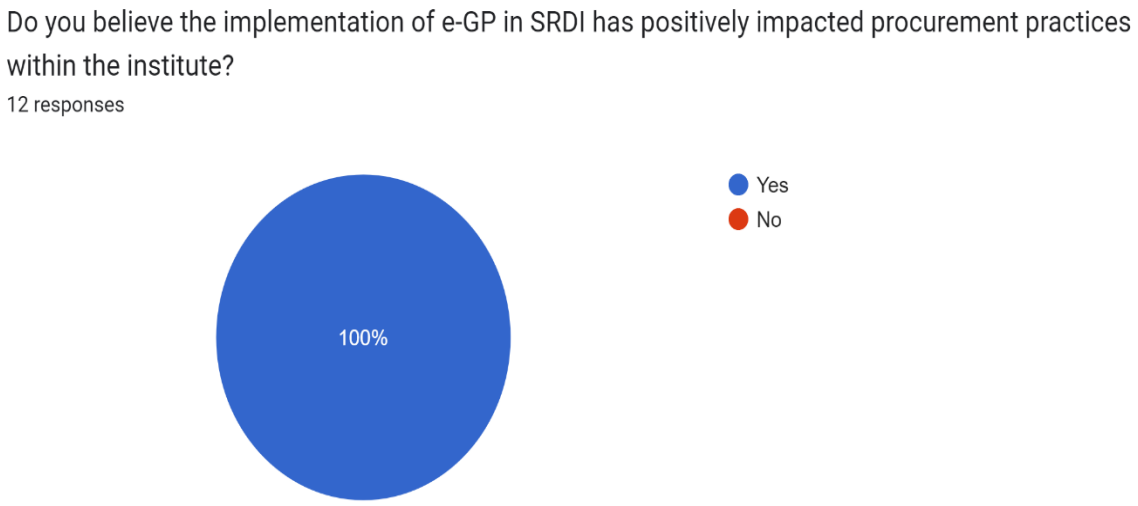


Figure 12: Belief of SRDI personnels about e-GP system

the chart titled "Impact of e-GP Implementation on Procurement Practices" provides an overview of SRDI procurement personnel' perceptions regarding the impact of e-GP (Electronic Government Procurement) implementation on procurement practices within the institute. The chart displays the percentage of respondents who believe that the implementation of the e-GP system has had a positive impact, reflecting their overall assessment of the system's effectiveness in improving procurement processes.

All respondents (100%) expressed a positive perception of the e-GP implementation's impact on procurement practices within SRDI. This unanimous agreement indicates that the procurement personnel who participated in the survey believe that the adoption of the e-GP system has been beneficial and has brought about improvements in procurement activities.

The chart's results suggest that the introduction of the e-GP system has been well-received and positively evaluated by SRDI procurement personnel. Their unanimous belief in the system's positive impact on procurement practices highlights the perceived benefits of increasing efficiency, transparency, and accountability in procurement processes. The findings imply that the e-GP system has been successful in achieving its intended objectives within SRDI, garnering strong support and endorsement from the staff involved in procurement activities. These insights are crucial for understanding the staff's overall satisfaction with the e-GP

system's implementation and its perceived contributions to enhancing procurement practices in the institute.

3.12 Sentiment Analysis

Sentiment Analysis of the responses regarding the prospects of the e-GP system in SRDI reveals a generally positive outlook among the participants. Most of the comments express optimism and enthusiasm about the potential benefits and improvements that the e-GP system can bring to the institute's procurement practices. Several key themes emerge from the sentiment analysis:

- Enthusiasm and Support: Most respondents express enthusiasm and strong support for the e-GP system, highlighting its potential to revolutionize procurement processes. They believe that e-GP can enhance accountability, transparency, and efficiency, leading to better value for money and improved decision-making.
- Decentralization and Capacity Building: Many participants stress the importance of decentralizing the e-GP system within SRDI. They advocate for expanding e-GP adoption to all offices, emphasizing the need for capacity building and training to ensure successful implementation.
- Training and Knowledge Dissemination: A recurring theme is the call for increased training and knowledge dissemination on the e-GP system. Participants emphasize the importance of equipping more officers with the necessary skills and expertise to effectively utilize the system.
- Improved Procurement: Respondents believe that e-GP will lead to better procurement outcomes, ensuring competitive bidding, and reducing interference in the process. They also highlight the potential for cost savings and time efficiency.
- Focus on Innovation: Some respondents note that e-GP can foster innovation and improve the level of procurement effectiveness, enabling SRDI to acquire state-of-the-art equipment and materials for accurate analytical results.
- Standardization and Automation: Participants recognize the potential of e-GP to standardize and automate time-consuming procurement processes, thereby streamlining operations and enhancing productivity.

Figure 13: Word cloud of recommendations to improve e-GP system in SRDI.

Overall, the sentiment analysis indicates a positive and hopeful outlook on the prospects of the e-GP system in SRDI. The respondents' comments highlight the belief that e-GP implementation can positively impact procurement practices, contributing to the institute's objectives in a more efficient, transparent, and accountable manner. However, they also acknowledge the need for further training and decentralization to maximize the system's potential benefits and ensure its sustained success across all levels of SRDI.

Figure 14: Word cloud of problems faced while operating e-GP in SRDI

Sentiment Analysis of the responses regarding the problems faced in the e-GP portal and opinions on CPTU for further improvement reveals a mix of feedback and suggestions from the participants. The sentiment analysis identifies the following key themes:

- Performance and Speed Issues: Some respondents express concerns about the performance and speed of the e-GP portal, stating that it works slowly during peak times. They highlight the need for improving server capacity to enhance the system's efficiency.

- Lack of Online Verification and Service Procurement: Participants mention that the e-GP portal lacks an online verification system for tenderer's documents. Additionally, they point out that the system only facilitates goods and works procurement and does not support service procurement. This limitation is seen as an area for improvement.
- Technical Glitches: A few participants report experiencing technical glitches with the e-GP software, indicating the need for system improvements to address these issues.
- Complexity of the System: Some respondents find the e-GP system a bit complicated and suggest simplification for easier usability.
- Limited Involvement: A few participants state that they are not directly involved with the e-GP system and, therefore, cannot provide detailed comments on its functioning.
- Request for Judicial Assessment: One respondent suggests the need for a judicial assessment of making specifications, indicating the importance of ensuring proper procedures in the procurement process.

Regarding opinions on CPTU for further improvement of the e-GP portal, sentiments are mainly focused on the call for CPTU's attention to address the identified issues. Participants emphasize the importance of CPTU taking action to improve server speed, introduce online verification, and expand the e-GP system to accommodate service procurement. The CPTU's role in simplifying the system and addressing technical glitches is also highlighted.

Overall, the sentiment analysis indicates that while some participants have faced challenges with the e-GP portal, they offer constructive feedback and suggestions for improvement. The opinions on CPTU's role are generally positive, with respondents expecting the central procurement unit to proactively address the identified issues to enhance the e-GP portal's functionality and usability. The participants' feedback highlights the importance of continuous improvement and technical support to ensure a smooth and efficient procurement process through the e-GP system.

3.13 Independent Samples T-Test

The independent samples t-test was conducted to compare the Completion time (days) between procurement activities done through the manual system and the e-GP system in the Soil Resource Development Institute (SRDI). The purpose of this analysis was to examine whether the e-GP system has a significant impact on the time taken to complete procurement activities and to evaluate the efficiency of the digital procurement process in SRDI.

The t-test yielded a statistically significant result ($t(11.0) = 2.51$, $p = 0.015$), indicating that there is a significant difference in the mean Completion time between the two procurement methods. This result provides evidence to support the hypothesis that the e-GP system has an impact on the efficiency of procurement practices within SRDI.

Table 1: t-Test result

Independent Samples T-Test

		Statistic	df	p	Mean difference	SE difference
Completion time (days)	Student's t	2.51	11.0	0.015	22.4	8.94

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

Based on the results, we reject the null hypothesis (H_a: μ Manual $\leq \mu$ e-GP) and accept the alternative hypothesis (H_a: μ Manual $> \mu$ e-GP), indicating that the e-GP system is associated with a significantly shorter Completion time for procurement activities compared to the manual system. This finding suggests that the implementation of the e-GP system has positively impacted procurement practices within SRDI by reducing the time taken to complete procurement activities, which can lead to increased efficiency and streamlined processes in the institute's procurement operations.

Table 2: Comparison of times needed for both methods.

Group Descriptives

	Group	N	Mean	Median	SD	SE
Completion time (days)	Manual	6	45.8	43.5	22.5	9.19
	e-GP	7	23.4	22.0	7.16	2.71

Upon further examination of the group descriptives, it was found that the mean Completion time for procurement activities using the manual system was 45.8 days, with a standard deviation of 9.19 days. In contrast, the mean Completion time for procurement activities using the e-GP system was significantly lower at 23.4 days, with a standard deviation of 2.71 days. This substantial difference in mean Completion time (22.4 days) suggests that the e-GP system has the potential to expedite procurement processes and reduce delays in SRDI's procurement activities.

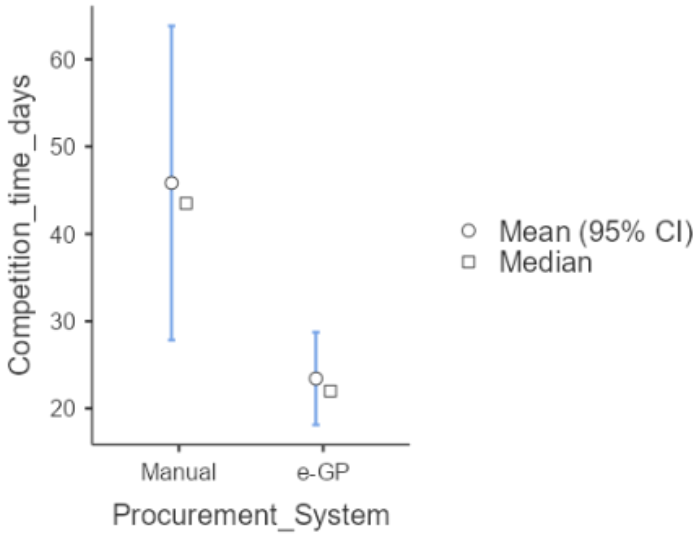


Figure 15: Comparison of times needed for both methods.

The finding that the e-GP system leads to a shorter Completion time is crucial as it indicates the system's effectiveness in streamlining procurement processes, reducing administrative burden, and enhancing overall efficiency in SRDI's procurement operations. Shorter Completion time can translate to cost savings, improved resource allocation, and faster project implementation, all of which contribute to the institute's objectives and mission.

The results of the t-test reinforce the notion that the adoption of the e-GP system has positively impacted procurement practices within SRDI. By providing a more efficient and streamlined procurement process, the e-GP system can contribute to better project management, increased transparency, and improved accountability in the procurement activities of the institute.

However, it is essential to acknowledge that the sample size in this study was relatively small (N = 13) due to the limited number of responses received from the survey. While the analysis yielded significant results, a larger sample size would strengthen the statistical power and generalizability of the findings.

In conclusion, the results of the independent samples t-test provide strong evidence that the e-GP system has a significant impact on the Completion time for procurement activities in SRDI. The implementation of the e-GP system has resulted in a substantially shorter Completion time compared to the traditional manual procurement process. This finding highlights the potential benefits of digital transformation in public procurement and emphasizes the importance of leveraging modern technologies to enhance efficiency and effectiveness in procurement practices. The e-GP system's successful adoption in SRDI can serve as a model for other government institutions looking to improve their procurement processes and embrace digital solutions for better governance and resource management.

Chapter-IV: Discussion and Findings of the Study

4.1 Benefits of e-GP

The results of the study point to several important benefits associated with the implementation of the Electronic Government Procurement (e-GP) system in the Soil Resource Development Institute (SRDI). Participants reported that the e-GP system has led to increased transparency in procurement processes, providing a clearer view of the entire procurement lifecycle. This enhanced transparency fosters a more accountable and fair decision-making process, promoting public trust in the procurement activities of SRDI.

4.1.1 Speed of the Work

One of the key advantages of the e-GP system reported by participants is the notable improvement in the speed of procurement activities. The digitalization of procurement processes has streamlined various stages, leading to a reduction in the time taken to complete procurement activities. Participants highlighted that procurement tasks that previously took weeks or even months to accomplish under the manual system are now accomplished more efficiently and swiftly through the e-GP system.

4.1.2 Tender Evaluation Time

The study also found that the e-GP system has significantly shortened the tender evaluation time in SRDI. By automating the evaluation process and providing a centralized platform for tender submissions, the e-GP system facilitates quicker and more effective tender evaluations. This expedited tender evaluation process allows SRDI to make prompt and well-informed decisions, leading to faster project implementation.

4.1.3 Number of Complaints

The findings indicate a decline in the number of complaints regarding the procurement process since the implementation of the e-GP system. Participants noted that the transparent and standardized nature of the system has reduced ambiguities and disputes related to procurement activities, leading to a decrease in the number of complaints received.

4.1.4 Nature of Complaints

Despite the overall reduction in complaints, some participants reported minor issues related to specific procurement activities. These complaints were mostly associated with user errors, technical glitches, or discrepancies in the procurement documentation. Such issues suggest the need for ongoing training and technical support to ensure the smooth operation of the e-GP system.

4.1.5 Cost of Procurement

While not a significant focus of the study, participants generally acknowledged that the e-GP system has the potential to contribute to cost savings in procurement activities. The streamlined processes, reduced paperwork, and efficient tender evaluations are expected to lead to cost-effective procurement outcomes.

4.1.6 Transparency in the e-GP

Transparency emerged as a prominent advantage of the e-GP system. The electronic platform ensures that procurement processes are open and accessible to all stakeholders, promoting fair competition and preventing undue influence. Participants praised the transparency of the e-GP system as a key driver of trust and accountability in the procurement activities of SRDI.

4.2 Difficulties

The study identified several challenges and difficulties encountered in the implementation of the e-GP system in SRDI. The major difficulties reported by participants include:

4.2.1 Lack of Trained People

A significant challenge faced by SRDI is the lack of sufficient personnel with adequate training and expertise in using the e-GP system. This highlights the importance of continuous capacity building and training initiatives to enhance the proficiency of SRDI staff in operating the e-GP system effectively.

4.2.2 Problem in the Server of CPTU

Some participants expressed concerns about occasional slowdowns and technical issues in the e-GP system, particularly during peak times. These issues were attributed to problems with the server of the Central Procurement Technical Unit (CPTU), which manages the e-GP platform. Addressing server-related problems is crucial to maintaining the system's efficiency and reliability.

4.2.3 Insufficient Training of the Tenderers

Apart from SRDI staff, the study found that some tenderers lacked sufficient training and familiarity with the e-GP system. Insufficient training of tenderers can lead to errors in submitting bids and delay the procurement process. To address this, comprehensive training and support should be extended to both SRDI staff and external tenderers.

4.2.4 Lack of Interest of PE (Procuring Entity)

Some participants mentioned that certain Procuring Entities (PEs) showed resistance or a lack of interest in fully adopting the e-GP system. Such resistance can hinder the system's overall effectiveness and necessitates advocacy and awareness campaigns to promote the benefits of e-GP to all stakeholders.

4.2.5 Log-in Problem in e-GP

A few participants reported occasional log-in issues with the e-GP system. Log-in problems can hinder user access to the platform and affect the efficiency of procurement processes. Addressing technical issues promptly is essential to ensure uninterrupted access to the e-GP system.

4.2.6 Inadequacy of the Process

Participants also highlighted that certain procurement processes might not be adequately covered by the e-GP system, particularly in the case of service procurement. Addressing these inadequacies and expanding the scope of the e-GP system can further enhance its overall effectiveness.

In conclusion, the study's discussion and findings highlight the numerous advantages of the e-GP system in SRDI, which include increased transparency, improved efficiency, and a reduced time for tender evaluation. The implementation of the e-GP system has resulted in positive outcomes for procurement practices within SRDI, contributing to better resource management, cost savings, and enhanced accountability. However, the study also reveals some challenges related to user training, technical issues, and resistance to change, which need to be addressed to fully realize the potential of the e-GP system. By addressing these challenges and continuing to build capacity, SRDI can leverage the benefits of the e-GP system to foster more effective and transparent procurement practices, ultimately contributing to the institute's objectives and mission.

4.3 Limitations of the Study

Despite the valuable insights gained from this study on the implementation of Electronic Government Procurement (e-GP) in the Soil Resource Development Institute (SRDI), there are several limitations that should be acknowledged:

Small Sample Size: The study's sample size was limited to 12 respondents from SRDI staff who were directly involved in procurement activities. While efforts were made to select individuals with relevant expertise, the small sample size may limit the generalizability of the findings to the entire SRDI population.

Non-Representation of all Stakeholders: The study focused solely on the perspectives of SRDI staff involved in procurement activities. However, other stakeholders, such as suppliers, contractors, and end-users, were not included in the study. Their views and experiences could provide additional insights into the impact of the e-GP system.

Self-Reported Data: The data collected through the survey questionnaire relied on self-reported responses from the participants. As such, there might be potential for response bias or inaccuracies due to memory recall or social desirability bias.

Time Constraints: Conducting a comprehensive analysis of the e-GP system's impact within SRDI requires an extended timeframe. However, due to time constraints, the study's scope and data collection were limited, potentially affecting the depth of analysis and breadth of insights.

Limited Tender Data: The tender data collected for comparison between the manual and e-GP systems were limited in scope and may not represent all procurement activities conducted by SRDI. A more extensive and diverse dataset would provide a more comprehensive understanding of the differences between the two systems.

Lack of Control Group: The study focused on comparing the e-GP system with the manual procurement system within SRDI. However, the absence of a control group or comparison with other organizations using e-GP might limit the ability to attribute observed outcomes solely to the implementation of the e-GP system.

Context-Specific Findings: The findings of this study are specific to SRDI and may not be applicable to other organizations or contexts with different structures, procurement needs, or capacities.

Limited Quantitative Analysis: The study primarily relied on descriptive statistics and a t-test for data analysis. While these methods provide valuable insights, more advanced statistical techniques and multivariate analyses could have enriched the findings further.

Time Sensitivity: The study was conducted during a specific period, and the impact of the e-GP system may continue to evolve over time. Future studies should consider conducting longitudinal research to capture changes and developments over an extended period.

External Factors: The study did not consider external factors that might influence procurement practices in SRDI, such as changes in government policies, economic conditions, or technological advancements.

Despite these limitations, the findings of this study provide valuable information on the benefits and challenges of the e-GP system implementation in SRDI. Future research can build upon these insights to address the limitations and explore the broader implications of digital transformation in public procurement.

4.4 Challenges:

Several challenges were encountered during the conduction of this study on the implementation of Electronic Government Procurement (e-GP) in the Soil Resource Development Institute (SRDI):

Access to Data: Obtaining access to accurate and comprehensive data, especially from SRDI's procurement records and historical data, posed a challenge. Data availability, data completeness, and data quality were crucial factors in ensuring the validity and reliability of the study's findings.

Limited Resources: The study's scope and depth of analysis were constrained by limited resources, including time, budget, and manpower. As a result, certain aspects of the e-GP system's impact on procurement practices might not have been thoroughly explored.

Resistance from Stakeholders: Some SRDI procurement personnel might have been hesitant or unwilling to participate in the survey or share their experiences openly, potentially due to concerns about the study's objectives or confidentiality. This resistance could have affected the representativeness of the sample and the validity of the data.

Selection Bias: The purposive sampling technique used to select respondents might have introduced selection bias, as certain individuals might have been overrepresented or underrepresented in the sample. This bias could influence the generalizability of the study's findings.

Limited Generalizability: Due to the small sample size and the study's focus on SRDI, the findings may have limited generalizability to other organizations or contexts beyond SRDI.

Data Analysis Complexity: Analyzing the survey data and tender records using statistical methods, such as a t-test, required expertise and familiarity with the software, which could be challenging for researchers without extensive statistical knowledge.

Time Constraints: The study's timeline might not have allowed for an in-depth exploration of all facets of the e-GP system's impact on SRDI's procurement practices. A more extended research period might have provided a more comprehensive understanding.

Limited Supplier and Contractor Participation: The study did not include perspectives from suppliers and contractors, who play a crucial role in the procurement process. Their insights and experiences could have enriched the findings further.

Influence of External Factors: The study did not account for external factors that might have influenced SRDI's procurement practices, such as changes in government policies or economic conditions.

Reliance on Self-Reported Data: The study relied heavily on self-reported data from survey respondents, which might be subject to recall bias or social desirability bias, potentially affecting the accuracy of responses.

Despite these challenges, the study successfully provided valuable insights into the implementation of the e-GP system in SRDI and its impact on procurement practices. Researchers conducting future studies in this area should consider addressing these challenges to enhance the robustness and scope of their findings.

Chapter-V: Recommendations

Based on the findings and limitations of the study on the implementation of Electronic Government Procurement (e-GP) in the Soil Resource Development Institute (SRDI), the following recommendations are suggested:

Adequate Change Management Program: SRDI should implement a comprehensive change management program to facilitate the transition to the e-GP system successfully. This program should include awareness campaigns, training sessions, and workshops for all procurement personnel involved in the procurement process to ensure a smooth adaptation to the new system.

Upgradation of CPTU Server: To address the issue of slow server performance during peak times, the Central Procurement Technical Unit (CPTU) should invest in upgrading and improving the server infrastructure. A robust and efficient server system will enhance the overall performance and user experience of the e-GP portal.

Internet Connectivity: Considering the importance of a stable internet connection for using the e-GP system, SRDI should assess and enhance its internet connectivity. Adequate bandwidth and reliable connectivity will help prevent disruptions and delays during the procurement process.

Cyber Security: To ensure the security and integrity of the e-GP system and sensitive procurement data, SRDI should prioritize cyber security measures. Implementing strong security protocols, encryption, and regular security audits will safeguard the system from potential cyber threats.

Training of Contractors: Apart from providing training to SRDI personnel, it is essential to extend training initiatives to contractors and suppliers who participate in the e-GP system. Educating them on the process and requirements will improve their ability to engage effectively in electronic procurement.

Incorporating the Concerned Organization: For successful implementation and improvement of the e-GP system, it is crucial to involve and incorporate the concerned organization, such as the Ministry of Planning, the Implementation Monitoring and Evaluation Division (IMED), and other relevant stakeholders. Their support and collaboration will enhance the effectiveness of the system.

Effective Training Program: The training program on the e-GP system should be comprehensive and ongoing. Regular workshops, refresher courses, and hands-on sessions should be conducted to update procurement personnel' skills and knowledge, ensuring they stay up to date with the latest developments and best practices.

Overall Recommendations: In addition to the specific recommendations mentioned above, SRDI should consider the following overall recommendations:

1. Continuous Monitoring and Evaluation: Regularly monitor the performance of the e-GP system and evaluate its impact on procurement practices. This will help identify areas for improvement and ensure the system's continuous enhancement.
2. Stakeholder Engagement: Encourage open communication and engagement with all stakeholders involved in the procurement process. Their feedback and suggestions can be valuable in refining the e-GP system further.
3. Scalability and Expansion: As SRDI continues to embrace digital transformation, the e-GP system should be designed to accommodate future growth and expansion. Scalability and flexibility will enable its seamless integration into all offices and branches of SRDI.
4. Collaboration with CPTU: Collaborate closely with the Central Procurement Technical Unit (CPTU) to stay informed about system updates, best practices, and any changes in regulations related to electronic procurement.

By implementing these recommendations, SRDI can overcome challenges and capitalize on the benefits offered by the e-GP system, ultimately enhancing efficiency, transparency, and accountability in its procurement practices.

Conclusion

The comprehensive analysis of the implementation of Electronic Government Procurement (e-GP) in the Soil Resource Development Institute (SRDI) provides valuable insights into the impact of digital transformation on procurement practices. The study adopted a mixed-methods approach, integrating both quantitative and qualitative data, to explore the benefits and challenges of the e-GP system in SRDI. The findings shed light on the current state of procurement practices and the prospects of the e-GP system in achieving SRDI's objectives.

The results of the study highlight several significant benefits associated with the e-GP system. Participants reported increased transparency in procurement processes, leading to enhanced accountability and public trust in SRDI's procurement activities. Moreover, the e-GP system demonstrated significant improvements in the speed of work and tender evaluation time, contributing to faster project implementation and resource utilization.

The study also revealed a decline in the number of complaints related to procurement activities since the adoption of the e-GP system. This reduction can be attributed to the system's transparency, standardization, and efficiency in handling procurement processes. However, some participants expressed concerns about specific challenges, including the lack of trained personnel, occasional technical issues with the e-GP portal, and resistance from certain Procuring Entities (PEs). These challenges highlight the need for continuous capacity building, technical support, and advocacy efforts to promote the effective utilization of the e-GP system.

The findings further emphasized the importance of addressing technical issues, improving server capacity, and expanding the scope of the e-GP system to cover all aspects of procurement, including service procurement. Addressing these challenges will contribute to the system's overall effectiveness and facilitate seamless procurement processes.

In conclusion, the study demonstrates that the implementation of the e-GP system has positively impacted procurement practices within SRDI, leading to increased efficiency, transparency, and accountability. The benefits of the system are evident in the reduction of procurement timelines, the standardization of processes, and the enhanced management of procurement activities.

To maximize the potential of the e-GP system, SRDI should invest in continuous training and capacity building for its personnel, as well as collaborate closely with the Central Procurement Technical Unit (CPTU) to address technical issues and server capacity concerns. Moreover, raising awareness and promoting the benefits of e-GP among all stakeholders, including Procuring Entities, is crucial for fostering a supportive environment for the system's growth.

Overall, the findings of this study contribute to a better understanding of the impact of digital transformation on public procurement practices within SRDI. The study provides valuable insights that can inform policy decisions and strategies to optimize the use of the e-GP system, ultimately contributing to SRDI's mission of sustainable soil resource management and development. As the institute continues its journey towards a more efficient and transparent procurement process, leveraging the potential of the e-GP system will be paramount in achieving its long-term objectives.

Project Timeline

Activity	W1 to W4	W5 to W8	W9 to W12	W12 to W17	W18 to W21
April 2023 1. Literature review 2. Develop research plan and proposal. 3. Pre-test research instruments					
May 2023 1. Obtain approvals and permissions. 2. Data collection from SRDI (interviews, surveys) 3. Validate and cross-reference data					
June 2023 1. Complete data collection 2. Data entry and cleaning 3. Descriptive data analysis					
July 2023 1. Advanced statistical analysis 2. Interpretation of results 3. Draft case study report					
August 2023 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					

References

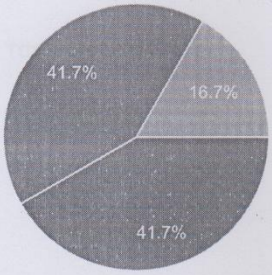
1. Di Tella, R. and E. Schargrodsky, *The Role of Wages and Auditing during a Crackdown on Corruption in the City of Buenos Aires.* The Journal of Law and Economics, 2003. **46**(1): p. 269-292.
2. Khwaja, A.I. and A. Mian, *Do Lenders Favor Politically Connected Firms? Rent Provision in an Emerging Financial Market.* The Quarterly Journal of Economics, 2005. **120**(4): p. 1371-1411.
3. Faccio, M., *Politically Connected Firms.* American Economic Review, 2006. **96**(1): p. 369-386.
4. World, B., R. Bajpai, and C.B. Myers, *Enhancing Government Effectiveness and Transparency: The Fight Against Corruption*, in *Global Report*. 2020. p. 34-39.
5. Huda, M.N., *Factors Influencing Electronic Government Procurement (e-GP) in Bangladesh*. 2015: Dhaka.
6. Al-Hossienie, C.A. and S.K. Barua, *Applications of e-governance towards the establishment of digital Bangladesh: Prospects and challenges.* Journal of E-Governance, 2013. **36**(3): p. 152-162.
7. Bhuiyan, M.S.H. *e-government applications in Bangladesh*. in *Proceedings of the 4th International Conference on Theory and Practice of Electronic Governance*. 2010. New York, NY, USA: ACM.
8. Kalakota, R., M. Robinson, and D. Tapscott, *E-business 2.0: Roadmap for Success*. Vol. 11. 2001: Addison-Wesley Boston.
9. Attaran, M. and S. Attaran, *Catch the wave of e-procurement.* INDUSTRIAL MANAGEMENT-CHICAGO THEN ATLANTA-, 2002: p. 16-21.
10. Davila, A., M. Gupta, and R. Palmer, *Moving Procurement Systems to the Internet.* European Management Journal, 2003. **21**(1): p. 11-23.
11. Croom, S.R. and A. Brandon-Jones, *Key issues in e-procurement: Procurement implementation and operation in the public sector.* Journal of Public Procurement, 2005. **5**(3): p. 367-387.
12. Foroughi, A., *MRO and eProcurement: Opportunities and Challenges.* University of Southern Indiana, 2008.
13. Croom, S. and R. Johnston, *Examining the contribution of internal customer service to improved e-procurement performance: A Case Study investigation.* 2003.

14. Croom, S. and R. Johnston, *E-service: enhancing internal customer service through e-procurement.* International Journal of Service Industry Management, 2003. **14**(5): p. 539-555.
15. Jönsson, L., et al., *Implementing an IBX e-procurement solution: Are there any success factors?* 2010.
16. Vanjoki, V., *Automated Purchase to Pay Process Value Modeling and Comparative Process Speeds.* 2013.
17. Aisbett, J., R. Lasch, and G. Pires, *A decision-making framework for adoption of e-procurement.* International Journal of Integrated Supply Management, 2005. **1**(3): p. 278-278.
18. Singer, T., *MRO e-procurement: Where is it now?*, in *Plant Engineering (Barrington, Illinois)*. 2003.
19. Hawking, P., et al., *E-procurement: is the ugly duckling actually a swan down under?* Asia pacific journal of marketing and logistics, 2004. **16**(1): p. 3-26.
20. Cole, M.T., R.B. Davies, and T. Kaplan, *Protection in government procurement auctions.* Journal of International Economics, 2017. **106**: p. 134-142.
21. Angeles, R. and R. Nath, *Business-to-business e-procurement: Success factors and challenges to implementation.* Supply Chain Management, 2007. **12**(2).
22. Kaliannan, M., H. Awang, and M. Raman, *Electronic procurement: a case study of Malaysia's e-Perolehan (e-procurement) initiative.* International Journal of Electronic Governance, 2009. **2**(2/3): p. 103-103.
23. Hasan, H.B., *A Study on the Implementation of e-GP (Electronic Government Procurement System) in Public Works Department: Impact on Present Procurement Practices and Future Scopes.*
24. Chow, S.-C., et al., *Power Analysis*, in *Sample Size Calculations in Clinical Research: Third Edition*, S.-C. Chow, et al., Editors. 2017, Chapman and Hall/CRC: Third edition. | Boca Raton: Taylor & Francis, 2017. | Series: Chapman & Hall/CRC biostatistics series | "A CRC title, part of the Taylor & Francis imprint, a member of the Taylor & Francis Group, the academic division of T&F Informa plc.". p. 16-18.
25. Rana, T. *Sentiment Analysis using R*. [Kaggle] 2022; Available from: https://www.kaggle.com/rana2hin/sentiment-analysis-using-r.

Annexure-1

What is your knowledge level about the e-GP system? Copy

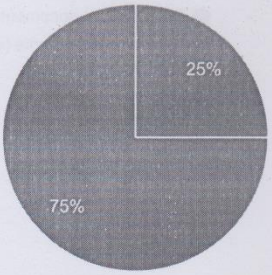
12 responses



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

Have you ever participated in a procurement activity using the e-GP system in SRDI? Copy

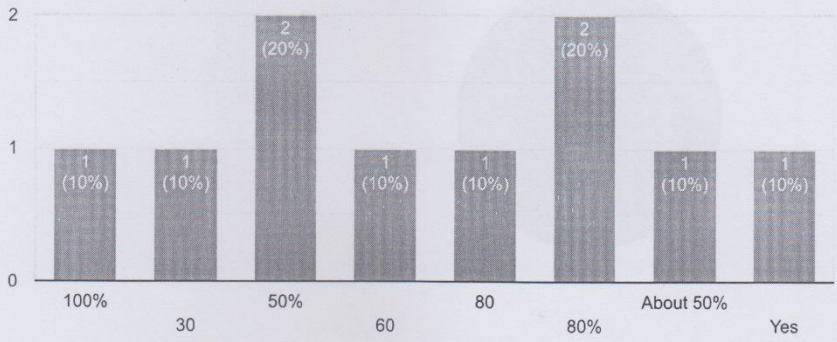
12 responses



- Yes
- No

If yes, please indicate the percentage of procurement activities conducted using the e-GP system compared to the total annual volume of procurement in SRDI Copy

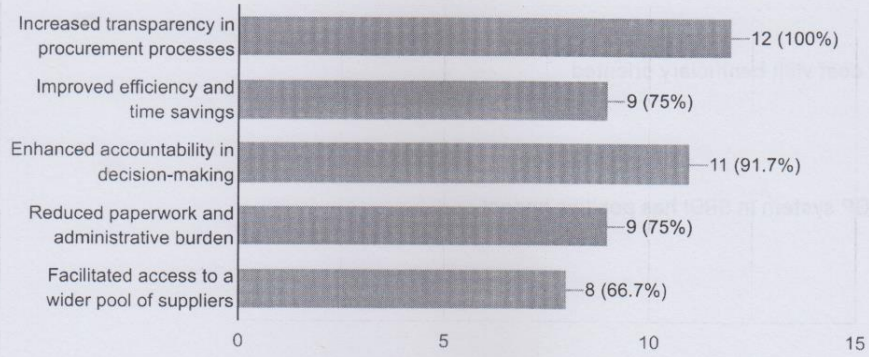
10 responses



What are the benefits you have experienced or anticipate with the use of the e-GP system? *(Please select all that apply)*

Copy

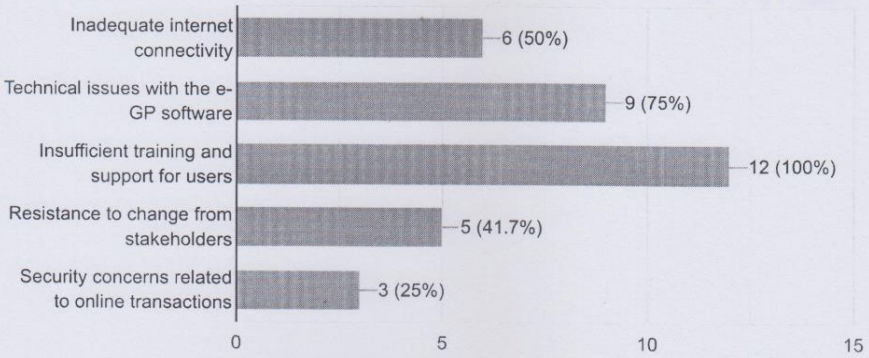
12 responses



What challenges or difficulties have you encountered while operating the e-GP system in SRDI? *(Please select all that apply)*

Copy

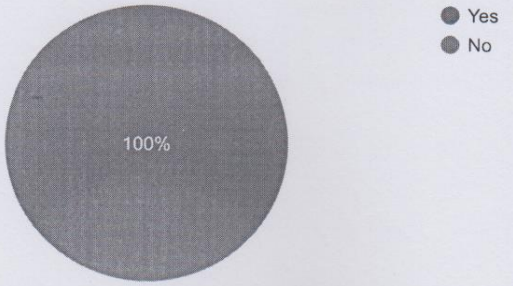
12 responses



Do you believe the implementation of e-GP in SRDI has positively impacted procurement practices within the institute?

Copy

12 responses



If no, please provide a brief explanation for your response

5 responses

Yes

Time paper cost visit benificiary oriented

yes

I believe, e-GP system in SRDI has positive impact.

In your opinion, what are the future prospects of the e-GP system in SRDI? How can it further improve procurement practices and contribute to the institute's objectives? Please share your thoughts

12 responses

Need more support,decentralized

[e-GP system is a modern technique for procurement except services goods and works procurement done by e-GP system, service procurement done by manual procurement system. SRDI started e-GP from 2018 and now a days 80% of procurement are done by e-GP except services. SRDI procurement system is central based means head office based so it should be decentralized. Every offices of SRDI should procure their goods and works through e-GP. Capacity building of SRDI personnel needed for start e-GP in all offices.]

Limited number of officers understood the e-GP system in the institute. Training on e-GP system should be provided to more officers.

100 percent e-GP implemetation will be possible within a few years as some dedicayed guys are involved with this system. But decimination of knowledge is highly required to sustain this scenario.

e-GP System is a web based system which encompasses the total procurement lifecycle and records the all procurement activities. SRDI started e-GP from 2018 and now a days 80% of procurement are done by e-GP except services. SRDI procurement system is head office based, it should be decentralized. Training of SRDI personnel needed for start e-GP in all offices.

e-GP system can improve with proper training.

By eGP procurement system easier.

Future prospect is very enthusiastic,it creats more accountable in case of e GP.Need more capacity building of SRDI officers.

More training is required to include more employees in the system.

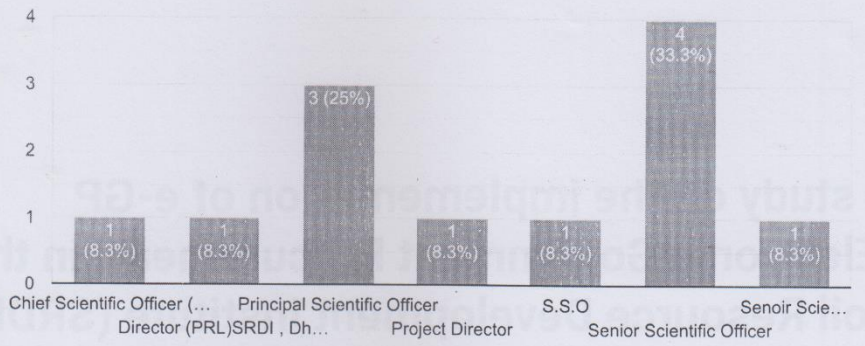
As the process is completed through on line, so no political and others interfere is occurred in the process. So, it is easy to ensure competition, accountability and transparency in the tender process which ensured best value for money.
Ultimately SRDI will able to procure best analytical instruments, perfect AR grade chemicals which help accurate and authentic analytical results of soil, water, plant and fertilizer samples. Additional benefits include savings on time, efforts and money involved in procurement.

An e-GP system is e-procurement specific to and conforms to government procurement regulations. In SRDI e-Procurement will make way for an improved innovation level with prime focus on the best life-cycle value. It ensures the accountability and effectiveness in procurement system of SRDI.
It will be the driving force in supplier-enabled innovation and will be proficient to manage

Designation

Copy

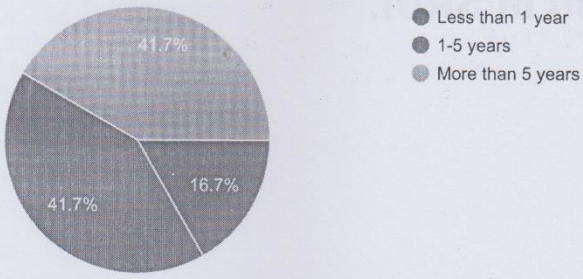
12 responses



Total experience in public procurement

Copy

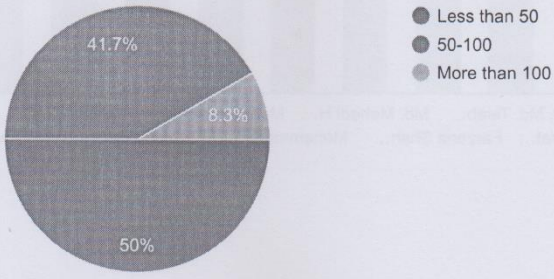
12 responses



Please indicate the approximate number of procurement activities conducted by SRDI annually

Copy

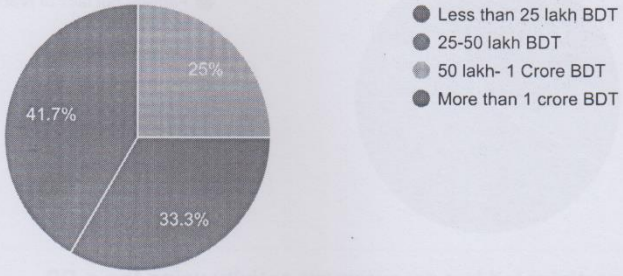
12 responses



What is the average estimated cost for any single procurement activity in SRDI? *(Excluding special project works)*

Copy

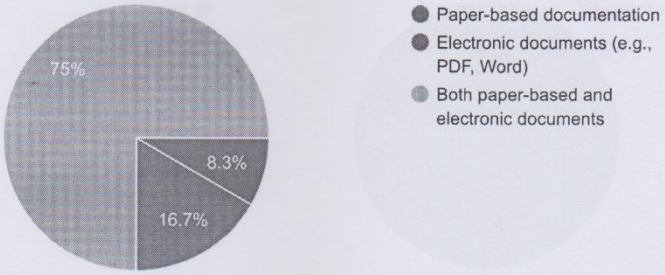
12 responses



What kind of documents do you currently use for procurement in SRDI?

Copy

12 responses



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

Copy

12 responses