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Evaluation of the Implementation of Electronic Procurement of Goods and Services (E-Procurement)

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Abstract

Electronic procurement (e-procurement) is widely implemented to improve transparency, efficiency, and accountability in public procurement. However, its implementation still faces various technical and administrative constraints that affect procurement performance in local governments. This study evaluates the implementation of e-procurement in the Procurement of Goods and Services (PUPRPKP) Office of Tabanan Regency for the 2022–2024 period, identifies implementation barriers, and formulates alternative improvement strategies. A qualitative descriptive approach was employed. Data were collected through structured interviews with procurement working groups, Commitment Making Officials, and service providers, supported by SPSE system observations and document analysis. Data were analyzed using an interactive model with purposive sampling. Findings show implementation is adequate but not yet optimal in meeting procurement principles. Efficiency shows time and cost savings, constrained by system instability and administrative duplication. Effectiveness is limited by SiRUP delays and price-based evaluation dominance. Transparency and accountability are generally applied, but monitoring and data consistency are weak. Competition is hindered by specification bias and low participation. Study concludes e-procurement in Tabanan is not yet optimal and requires strengthening infrastructure, system integration, regulation, and oversight to ensure compliance.

INTRODUCTION

Current advances in science and technology require governments to optimize public services to the wider community. One such government service is e-procurement, which represents an electronic version of the previously manual procurement process. E-procurement is a means of procuring goods and services that utilizes information technology in its implementation, eliminating the need for direct interaction between users and providers.

Common problems with the conventional system include corruption, collusion, and nepotism among related parties (Wisastra et al., 2019). Conventional procurement of goods and services is also considered inefficient due to its relatively high time and cost requirements (Swadesi & Sadad, 2017). Based on these issues, the government has transitioned to using e-procurement applications to support good governance (Andriana, 2021).

Based on Presidential Regulation Number 12 of 2021 concerning Government Procurement of Goods/Services, the implementation of e-procurement through Electronic

Procurement Services (LPSE) aims to increase efficiency, effectiveness, transparency, openness, fair competition, fairness, and accountability, as well as reduce the scope for corruption, collusion, and nepotism (KKN). In Tabanan Regency, e-procurement has been in use since 2013, but its implementation has faced several obstacles. SPSE observations from 2022 to 2024 show that of the 67 tender projects, there were 2 failed tenders, 2 re-tenders, 4 failed selection projects, and 3 re-selection projects. This data shows that the increasing number of tenders/re-selections indicates that the principle of efficiency in procurement has not been fully achieved.

In Indonesia, e-procurement has been institutionalized through the Electronic Procurement Service (LPSE) system under Presidential Regulation No. 12 of 2021. The system is designed to ensure efficiency, transparency, fairness, and accountability in public procurement processes (Komakech, 2016). However, empirical implementation across local governments shows varying levels of effectiveness, especially in regional agencies where technical and administrative constraints continue to hinder optimal performance (Ahmad, 2025; Kostka & Nahm, 2017; Nurmandi & Kim, 2015; Smoke, 2015).

Previous studies have widely examined e-procurement implementation from different perspectives. Research by Basmar (2015) at Gadjah Mada University highlights that system readiness and user competence significantly influence procurement effectiveness. Similarly, Suri and Dharmawan (2023) found that while e-procurement improves transparency, technical disruptions and weak integration across government systems reduce its efficiency. These findings indicate that digital procurement systems are not solely dependent on technological adoption but also institutional readiness (Adjei-Bamfo et al., 2020; Kabanda et al., 2019; Omweri, 2025).

Further research by Jayanegara (2019) emphasizes that accountability and transparency in e-procurement are strongly influenced by organizational culture and regulatory enforcement. Meanwhile, Andriana (2021) identifies potential risks of collusion in digital procurement systems, indicating that technology alone cannot eliminate unethical procurement practices without strong monitoring mechanisms. These studies collectively suggest persistent structural and operational challenges in e-procurement implementation (Gilbert & Celestin, 2025; Maiyaki et al., n.d.; Mohungoo et al., 2020).

Despite the growing body of literature, a clear research gap remains in the evaluation of e-procurement at the regional public works level, particularly in analyzing its implementation based on procurement principles such as efficiency, effectiveness, transparency, competition, fairness, and accountability simultaneously. Most prior studies focus on either national-level analysis or single-aspect evaluation, leaving a gap in comprehensive, multi-principle assessment at the local government level.

This study is urgent because procurement inefficiencies directly affect public infrastructure delivery, budget absorption, and service quality at the local level. In the case of Tabanan Regency, preliminary observations indicate recurring issues such as system disruptions, delayed procurement planning inputs, and inconsistencies between administrative and field data. These issues suggest that the intended benefits of e-procurement have not been fully realized, requiring systematic evaluation.

The novelty of this research lies in its integrated evaluation approach that simultaneously assesses all seven procurement principles within a single local government context over a

multi-year period (2022–2024). In addition, this study not only identifies implementation barriers but also formulates structured alternative solutions, including system integration, regulatory reinforcement, and digital infrastructure optimization, which have not been comprehensively addressed in previous studies.

The primary purpose of this research is to evaluate the implementation of e-procurement in the Public Works and Public Housing Department of Tabanan Regency, identify key obstacles across procurement stages, and develop actionable improvement strategies. This evaluation is expected to provide a clearer understanding of how e-procurement operates in practice compared to its intended regulatory framework.

The contribution of this study is both theoretical and practical. Theoretically, it enriches the literature on public procurement governance by providing empirical evidence from a developing-country local government context. Practically, it offers policy recommendations for improving system performance, enhancing procurement transparency, and strengthening institutional accountability. Ultimately, the findings are expected to support more efficient, transparent, and accountable public procurement systems that align with good governance principles.

METHOD

This study used a qualitative method with a descriptive research type that aims to assess the compliance of the implementation of procurement of goods and services with the Electronic Procurement Service (LPSE) e-procurement in Tabanan Regency in accordance with applicable regulations. According to Sugiyono (2005), a descriptive method is a method used to describe or analyze research results without drawing broader conclusions. The qualitative approach was chosen because this study aims to understand in depth the process of implementing e-procurement, the perceptions of procurement actors, and the obstacles faced in its implementation.

The research was conducted in the Procurement of Goods and Services (PBJ) Section, LPSE, and the PUPRPKP Office of Tabanan Regency for 3 months. The data collection technique used four methods: (1) Structured interviews with the Working Group, LPSE, PPK, PPTK, and service providers; (2) Observation of the workflow in the SPSE application; (3) Brainstorming with the Head of the PBJ Section and the Procurement Working Group to formulate alternative solutions; and (4) Documentation in the form of policies, photos, tables, and files related to procurement.

The sample was determined using purposive sampling with reference to the Central Limit Theorem and Roscoe (1975) which states that a reasonable sample size is in the range of 30 to 500 respondents. Data analysis used descriptive analysis of the interactive model with three main data sources: interviews for the first and second problem formulations, and brainstorming for the third problem formulation.

Table 1. Research Sample

No	Target Population Elements	Amount
1	PBJ: Head of PBJ Section and Working Group (3 people)	4 people
2	LPSE: LPSE Admin	1 person

No	Target Population Elements	Amount
3	PUPRPKP: PPK and PPTK	2 persons
4	Small Classification Goods/Service Providers	26 people
	Total	33 people

(source: processed by researchers, 2025)

Table 2. Independent Research Variables

No	Variables	Sub Variables	Description
1	Efficient	Procurement process time	How fast is the procurement process carried out from planning to contract?
		Operational cost savings	Reduction in administrative, logistics and other process costs compared to conventional methods
		Process automation	Use of electronic systems in every stage to reduce manual work
2	Effective	Procurement success rate	Percentage of procurement that was successfully implemented according to plan
		End user satisfaction	The level of satisfaction of parties using the goods/services resulting from procurement
		Achievement of procurement objectives	Conformity between procurement results and agency needs
3	Open	Procurement information is easily accessible	Availability of procurement information that is accessible to the public
		Transparency of the procurement process	How open are the stages of selection, evaluation and determination of winners?
4	Compete	Diversity of participants	Involvement of various types of providers including MSMEs and large companies
		Healthy competition	Fair competition without any indication of monopoly or price fixing
5	Transparent	Public data availability	How widely is procurement information available and accessible to the public?
		Clarity of process	Transparency in technical specifications, evaluation criteria, and decision basis
6	Fair/Non-Discriminatory	Openness to all providers	There are no restrictions that benefit certain parties
		MSME Participation	Opportunities for MSMEs to participate in government procurement
		Objectivity of evaluation	The assessment process is based on clear and objective criteria

No	Variables	Sub Variables	Description
7	Accountability	Procurement process documentation	All procurement stages are documented and can be reviewed.
		Auditable reporting	Procurement reports are prepared according to standards and can be audited by authorities.
		Traceable decisions	Procurement decisions have a clear and verifiable basis

RESULTS AND DISCUSSION

Description of Research Object

The objects of this study were users and providers of goods/services for construction projects who participated in electronic tenders in Tabanan Regency in 2022-2024, specifically at the Public Works and Public Housing (PUPRPKP) Office. Respondents consisted of two categories: Procurement Committees (7 respondents including the Procurement Working Group, PPK, and PPTK, all of whom held procurement expertise certifications in accordance with Presidential Decree No. 12 of 2021) and Goods/Service Providers (26 respondents from the small provider classification). Observations were conducted on 10 tender packages selected based on purposive sampling, with a predominance of infrastructure/physical construction projects.

Evaluation of E-Procurement Implementation Based on Procurement Principles

1. Efficiency Principle

Table 3. Observation Results of Efficiency Principles in E-Procurement

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
1	Pre-Tender	The use of MDP templates accelerates the preparation of digital KAK and HPS.	The MDP template helps to prepare the KAK and HPS more efficiently, but the preparation of the HPS is hampered if the price fairness evaluation is carried out manually.	Appropriate, if not through a price fairness evaluation.
2	Tender	Digital (paperless) evaluation saves logistics costs and time.	Digital evaluations save printing costs and real-time delivery time when there are no server constraints; however, verification of qualifications still requires original documents.	Appropriate, but not yet completely paperless in the qualification process.
3	Contract & Handover	E-Contract Management speeds up the administration and payment processes.	The billing process still requires many physical document attachments as a verification requirement in the regional finance department.	There is duplication of work between digital data input and providing physical files for

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
				disbursement of funds.

Based on the interview results, all respondents stated that electronic procurement of goods/services can save procurement time and costs by an average of 76% compared to manual systems. However, efficiency is still hampered by LPSE server disruptions, which often error or go down when accessed simultaneously with high intensity, and payment bureaucracy that is not yet fully digital. These results align with Ambarwati et al. (2025) who stated that the procurement process, which was initially fast, actually slowed down downstream due to technical constraints and inconsistencies in data input.

2. Effective Principles

Table 4. Results of Observations of Effective Principles in E-Procurement

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
1	Pre-Tender	Mapping plans in SiRUP ensures procurement is in accordance with field needs.	There was a delay in inputting the general procurement plan, resulting in several work packages being prepared with less detailed technical planning.	Digital planning is not yet fully in sync with the urgency of physical needs on the ground.
2	Tender	Selection through SPSE gets providers with the best quality and price.	Bid assessments still focus on the lowest price; evaluations of the technical quality of providers are sometimes less detailed.	It is appropriate to get the provider with the best price, but the technical quality needs to be evaluated in more detail.
3	Contract & Handover	Procurement results are in accordance with specifications and provide benefits to end users.	Procurement results are in accordance with end user needs.	In accordance.

Based on interviews with the procurement committees (PPK) and procurement consultants (PPTK), the quality of goods/services procurement met the established technical specifications, with an average level of conformity between the results and end-user needs of 92.5%. All participating suppliers met the TKDN value of ≥ 25% as stipulated in Presidential Regulation No. 12 of 2021. The main obstacle was the delay

in inputting the SiRUP, which led to a backlog of tender packages. These findings align with those of Yusuf et al. (2015), who stated that delays in inputting procurement plans are the primary cause of the backlog of tender packages.

3. Open Principle

Table 5. Observation Results of Open Principles in E-Procurement

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
1	Pre-Tender	Access to information is accessible to all vendors.	Package information in SiRUP is available online, but detailed technical announcements are often only accessible after the tender has begun.	Access to procurement plan information is now open, but the time lag for announcing package details is still too short.
2	Tender	Vendor participation without geographical barriers through SPSE accounts.	The system supports registration from anywhere, but technical issues occurred during crucial auction closing hours.	Geographical openness has been achieved, but the reliability of the system infrastructure remains an obstacle.
3	Contract & Handover	Information on winners and physical progress of the field can be monitored by the public.	Winner publications are available on the portal, but physical progress data updates are difficult for the general public to access.	Post-tender information disclosure is still administrative in nature and has not yet touched on public oversight of physical progress.

Based on interviews, all suppliers assessed that the procurement process in Tabanan Regency was very transparent and in accordance with applicable regulations. All guidelines, policies, and stages of the procurement process are available in the SPSE (Special Procurement System) and accessible to all qualified suppliers. This aligns with Jayanegara (2019), who emphasized the importance of transparent information regarding physical and technical progress in the field so that the public can monitor the conformity of work output with the initial contract.

4. Competitive Principles

Table 6. Observation Results of Competitive Principles in E-Procurement

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
1	Pre-Tender	Standard procedures and prohibitions on	There are indications that the preparation of technical	Standard procedures already exist, but the objectivity of the

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
		locking specifications to certain brands.	specifications is very much directed at certain products or service providers.	preparation of technical specifications is still vulnerable to intervention by certain interests.
2	Tender	Anonymous price and technical bidding competition within the system.	There are indications of similar bidding patterns between tender participants (collusive tendering) which are carried out outside the scope of system supervision.	The SPSE system guarantees anonymity, but cannot automatically detect collusion carried out outside the application.
3	Contract & Handover	Recording of provider performance report in SIKaP for the next competition.	The filling out of provider performance reports by PPK in SIKaP has not been carried out in a disciplined and consistent manner.	Updating provider performance data has not been running optimally.

Based on interviews, several suppliers indicated that there was match-fixing or unfair competition in some procurement processes. Furthermore, supplier participation remained low in some packages, prompting re-tendering. Regarding price competition, each supplier's price difference was small and not significantly different from market prices. This aligns with the findings of Putra et al. (2024) at the Sampang Regency Regional Secretariat.

5. Principle of Transparency

Table 7. Observation Results of Transparent Principles in E-Procurement

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
1	Pre-Tender	Public announcement of packages (location, quota, volume) in SiRUP.	There are still follow-up work packages that are suddenly announced near the end of the budget year.	Planning transparency is hampered by untimely data input patterns.
2	Tender	Monitoring of all tender stages in real-time on the LPSE portal.	All stages and results of the objection can be seen in the system.	In accordance.
3	Contract & Handover	Supervisory authority access to budget realization reports.	Budget realization reports are often only available internally, not published.	It is difficult for the public to verify whether the absorbed budget matches actual physical progress.

Based on interviews, all respondents responded positively: all procurement information is easily accessible through SPSE, including contract details, each provider's price, ranking, and objection information. SPSE includes an online Q&A

feature between the Working Group and providers, which is recorded in the Procurement Planning and Budgeting Agency (BAPP) to avoid personal contact. This aligns with Nurman (2021), who stated that bureaucratic barriers persist despite the availability of open information technology.

6. Principle of Fairness/Non-Discrimination

Table 8. Observation Results of the Fair/Non-Discriminatory Principle in E-Procurement

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
1	Pre-Tender	The qualification criteria are objective and impartial.	Qualification requirements are sometimes made so specific that they are difficult for local small and medium-sized MSMEs to meet.	Qualification standards have the potential to be discriminatory instruments that limit the participation of potential vendors.
2	Tender	Automatic rejection of offers by the system after the deadline has expired.	The system has automatically rejected it.	In accordance.
3	Contract & Handover	Payments are made in installments according to physical progress without bureaucratic obstacles/extortion.	Payments in installments can be made according to physical progress, but the verification process still requires hard copy files.	In accordance.

Based on interviews, all providers stated that the rules and procedures are available within the system for all providers without discrimination. There are no discriminatory policies; all providers receive the same information and are treated equally, regardless of their region of origin. This aligns with Saptawaty et al. (2022) who stated that the e-procurement platform technologically meets the principle of non-discrimination, but overly rigid document standardization creates indirect gaps for local MSMEs.

Principle of Accountability

Table 9. Observation Results of Accountability Principles in E-Procurement

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
1	Pre-Tender	Accountable digital footprint of HPS/KAK determination.	Documentation of working papers for preparing HPS is uploaded digitally in the internal system.	In accordance.
2	Tender	System activity logging and legal objection response obligations.	The working group responded to the objection by citing the applicable regulations.	In accordance.
3	Contract & Handover	Handover documentation	Progress photo documentation and	Mismatch between system administration data and

No	Stages	Hope (Theory & Regulation)	Reality on the Ground	Gap Analysis
		(PHO/FHO) as proof of budget accountability.	laboratory test reports are sometimes incomplete or out of sync with system data.	physical quality facts in the field.

Based on interviews, the entire procurement process can be accounted for by the relevant agencies because all data is automatically recorded in the system. Internal and external auditors can use the documents and data in the system for audit purposes after gaining access from the LPSE. The audit process is conducted through an audit form available in the system. This aligns with Amalia & Dwimawanti (2020), who stated that ideal accountability requires end-to-end integration of billing data and physical work results.

Obstacles and Alternative Solutions for E-Procurement

Based on the results of the evaluation of all procurement principles, various obstacles were found which can be summarized based on the stages of implementation and alternative solutions as follows:

Table 10. Summary of Obstacles and Alternative Solutions for E-Procurement in Tabanan Regency

Stages	Principle	Constraint	Alternative Solutions
Pre-Tender	Effective/Transparent	Delay in RUP input into SiRUP; sudden follow-up work packages near the end of the year	Implementing an automatic SiRUP locking system; setting a cut-off date for August/September through a Regent's Regulation; administrative sanctions for OPDs that are late
Pre-Tender	Compete	Technical specifications refer to a specific brand or vendor.	Requires a Probity Audit by APIP/Regional Inspectorate before documents are submitted to the Working Group
Pre-Tender	Open	The package announcement timeframe is too short for vendors	Announcing the draft technical document early (pre-announcement) on SPSE; providing proportional time flexibility for the announcement
Pre-Tender	Fair/Non-Discriminatory	The qualification requirements are too specific and difficult for local MSMEs to fulfill.	Simplifying qualification requirements for packages under 15 billion; breaking large packages into small-medium scale
Tender	Efficient	LPSE server often errors/down when usage intensity is high	Periodically increasing LPSE server bandwidth capacity; providing server backup; coordinating with LKPP
Tender	Effective	The assessment is dominated by the lowest price; the technical quality evaluation is less detailed.	Shifting the evaluation method to a value system (combination of 60-70% technical weight and 30-40% price) for complex packages

Stages	Principle	Constraint	Alternative Solutions
Tender	Compete	Indications of collusive tendering; low participant participation	Optimizing the SPSE document similarity detection feature; implementing the SIKaP blacklist; increasing tender outreach through social media and business associations.
Contract & Handover	Efficient	Billing/payment still requires a lot of physical documents (duplication of work)	Require BSrE certified TTE for PPK and providers; build SPSE-SIPD integration API to automate SPP/SPM issuance
Contract & Handover	Compete	Recording of provider performance reports in SIKaP is not disciplined and consistent	Establishing a No Assessment No Payment policy through the Regent's Circular Letter
Contract & Handover	Accountability	Mismatch between system administration data and physical quality in the field	Requires a quality test certificate from an accredited independent laboratory as a condition for signing the BAST; QR Code project nameplate linked to the contract document
Contract & Handover	Transparent	The public finds it difficult to verify whether the budget matches physical progress.	Building a Public Procurement Dashboard integrated with SPSE; updating project nameplates with QR Codes

CONCLUSION

Based on the evaluation results of the implementation of electronic procurement of goods and services (e-procurement) at the Tabanan Regency PUPRPKP Office referring to Presidential Regulation Number 12 of 2021, it can be concluded that e-procurement has generally run quite well, but has not been fully optimal in meeting all government procurement principles. The obstacles that occurred are divided into three stages: at the pre-tender stage, including delays in inputting RUP in SiRUP, sudden follow-up work packages, technical specifications that lock certain brands, too short an announcement time gap, and qualification requirements that burden local MSMEs; at the tender stage, including LPSE server disruptions, assessments that are still dominated by the lowest price, indications of supplier collusion, and low levels of participant participation; and at the contract and handover stage, including payment bureaucracy that still requires physical documents, undisciplined recording of SIKaP performance reports, and discrepancies in system administration data with physical quality in the field. Recommended alternative solutions include: implementation of an automatic SiRUP locking system accompanied by administrative sanctions; Probity Audit by APIP before documents are submitted to the Working Group; increasing LPSE server bandwidth capacity and providing a backup server; shifting the evaluation method to a value system for complex construction packages; implementing the SIKaP blacklist for collusive providers; integrating SPSE-SIPD based on TTE to eliminate physical payment documents; a No Assessment No Payment policy for provider performance report discipline; and requiring independent

laboratory quality test certificates as a requirement for BAST. For further research, it is recommended to expand the scope of the research by involving more agencies or other districts, and using a mixed methods approach to strengthen the validity of the findings regarding the factors causing obstacles, both internal and external.

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