

Digital Transformation of Public Procurement through SiRUP and E-Procurement: Supporting Good Governance in Papua Pegunungan

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ARTICLE INFO

Article history:

Received: 16 September 2026

Revised: 23 September 2026

Accepted: 28 September 2026

DOI:

10.61100/tacit.v4i2.383

Keywords:

Digital Transformation, e-Procurement, Good Governance, Papua Pegunungan, SiRUP



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ABSTRACT

Previous studies have generally examined SiRUP and e-Procurement separately, while limited research integrates both as a digital procurement transformation process in newly autonomous regions facing geographical and sociocultural constraints. This study analyzes their implementation and contribution to Good Governance in Papua Pegunungan Province. A descriptive-explanatory qualitative case study was conducted using observation, documentation, and semi-structured interviews with eleven purposively selected informants. Data were analyzed through condensation, presentation, verification, and NVivo-supported coding. The findings show that SiRUP supports transparency in procurement planning, while e-Procurement strengthens documentation, efficiency, accountability, and competition. However, implementation remains partial due to incomplete procurement plans, manual processes, limited human resources, connectivity, facilities, budgets, and institutional capacity. The study contributes an adaptive digital procurement perspective by identifying geographical and sociocultural conditions as contextual factors that interact with Edwards III's communication, resources, disposition, and bureaucratic structure dimensions in shaping digital procurement implementation.

ABSTRAK

Penelitian terdahulu umumnya mengkaji SiRUP dan e-Procurement secara terpisah, sementara penelitian yang mengintegrasikan keduanya sebagai proses transformasi digital pengadaan pada daerah otonom baru yang menghadapi kendala geografis dan sosiokultural masih terbatas. Penelitian ini menganalisis implementasi keduanya dan kontribusinya terhadap Good Governance di Provinsi Papua Pegunungan. Penelitian menggunakan pendekatan studi kasus kualitatif deskriptif-eksplanatori melalui observasi, dokumentasi, dan wawancara semi-terstruktur dengan sebelas informan yang dipilih secara purposif. Data dianalisis melalui kondensasi, penyajian, verifikasi, serta proses pengodean berbantuan NVivo. Hasil penelitian menunjukkan bahwa SiRUP mendukung transparansi perencanaan pengadaan, sedangkan e-Procurement memperkuat dokumentasi, efisiensi, akuntabilitas, dan persaingan. Namun, implementasinya masih parsial karena rencana pengadaan yang belum lengkap, proses manual, serta keterbatasan sumber daya manusia, konektivitas, fasilitas, anggaran, dan kapasitas kelembagaan. Penelitian ini berkontribusi pada perspektif transformasi digital pengadaan yang adaptif dengan mengidentifikasi kondisi geografis dan sosiokultural sebagai faktor kontekstual yang berinteraksi dengan dimensi komunikasi, sumber daya, disposisi, dan struktur birokrasi Edwards III dalam membentuk implementasi pengadaan digital.

1. INTRODUCTION

Government procurement of goods and services is a strategic instrument through which public budgets are translated into infrastructure, basic services, and broader social benefits. Because procurement involves the allocation and use of public resources, its quality cannot be assessed solely through administrative compliance. It also depends on the government's capacity to create public value, maintain integrity, promote fair

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competition, ensure efficiency, and remain accountable for procurement decisions. These principles are closely associated with Good Governance, which emphasizes transparency, accountability, effectiveness, participation, and the rule of law as essential foundations of public governance (World Bank, 1992). In this context, digitalization has become increasingly important because electronic procurement systems can improve information accessibility, process traceability, administrative efficiency, and opportunities for public oversight.

In Indonesia, the General Procurement Plan Information System (SiRUP) provides procurement information from the planning stage, while e-Procurement through the Electronic Procurement System (SPSE) supports and documents electronic supplier-selection processes. However, digital transformation in public procurement should not be understood merely as the replacement of manual documents with electronic applications. Digital transformation involves broader changes in organizational processes, institutional capacity, coordination, competencies, and the way public organizations create value through technology (Mergel et al., 2019; Vial, 2019). Accordingly, the effectiveness of SiRUP and e-Procurement depends on the institutional and organizational environment in which these systems operate. From a regulatory perspective, procurement digitalization in Indonesia is reinforced by Presidential Regulation No. 16 of 2018, as most recently amended by Presidential Regulation No. 46 of 2025.

The challenges of translating national digital procurement policies into effective implementation are particularly relevant in Papua Pegunungan Province, a new autonomous region established under Law No. 16 of 2022. Its mountainous geography, limited inter-district accessibility, uneven internet connectivity, and still-developing institutional capacity create implementation conditions that differ from those of regions with more established administrative and digital infrastructures. The institutional development of the Goods and Services Procurement Unit (UKPBJ) and the Electronic Procurement Service (LPSE) is occurring simultaneously with increasing demands for procurement digitalization. Furthermore, Presidential Regulation No. 108 of 2025 on Government Goods and Services Procurement for the Acceleration of Development in Papua provides specific provisions that accommodate regional characteristics, promote value for money, and strengthen the participation of micro and small enterprises, cooperatives, and Indigenous Papuan Business Actors (OAP). These conditions make Papua Pegunungan theoretically relevant for examining how digital procurement policies interact with institutional capacity and local geographical and sociocultural conditions, rather than treating the province merely as a different geographical research setting.

The empirical problem is reflected in the 2025 Procurement Governance Index (ITKP) of Papua Pegunungan Province, which stood at only 29.94 and was categorized as "Inadequate." The procurement-system utilization component scored 7.72, comprising SiRUP at 0.00, e-Tendering at 3.28, e-Contracts at 4.44, and e-Purchasing at 0.00. Procurement human-resource qualifications and competencies also received a score of 0.00, while UKPBJ maturity reached only 22.22. These figures indicate that the challenge extends beyond the availability of digital applications. Weaknesses in procurement planning, system utilization, human-resource capacity, institutional maturity, coordination, and service sustainability appear to coexist within the implementation environment. Therefore, the central empirical issue is not simply whether digital procurement systems are available, but how effectively these systems can be institutionalized and utilized under the specific administrative, infrastructural, geographical, and social conditions of Papua Pegunungan.

Previous studies have generally shown that e-Procurement can contribute to procurement effectiveness, transparency, accountability, efficiency, competition, and oversight, while other studies have identified human resources, technological infrastructure, organizational capacity, regulations, and institutional arrangements as important determinants of implementation. Research on SiRUP has also highlighted the importance of planning quality, data input, institutional authority, and budget adjustments. However, these strands of research have largely examined SiRUP, e-Purchasing, or e-Procurement separately, and many have been conducted in administrative settings with relatively established institutions and infrastructure. Consequently, there remains limited understanding of how procurement planning through SiRUP and procurement implementation through e-Procurement interact as parts of a broader digital procurement transformation, particularly in a newly autonomous region where institutional development occurs alongside substantial geographical, infrastructural, and sociocultural constraints.

This study addresses this gap by integrating SiRUP and e-Procurement within a single digital procurement transformation perspective and analyzing their implementation through George C. Edwards III's four dimensions of policy implementation: communication, resources, disposition, and bureaucratic struc-

ture. The novelty of the study lies in contextualizing these implementation dimensions by incorporating geographical and sociocultural conditions as contextual factors that may strengthen or constrain how the four dimensions operate in Papua Pegunungan. Rather than proposing that these contextual factors replace Edwards III's framework, the study examines how they interact with implementation capacity and shape the transition from partial digitalization toward more integrated digital procurement. This perspective also connects the implementation process with Good Governance outcomes, particularly transparency, accountability, efficiency, integrity, fair competition, information openness, and effective oversight. In this way, the study seeks to develop a more context-sensitive understanding of digital procurement transformation that may also provide analytical insights for other newly autonomous or infrastructure-constrained regions.

Based on this research gap and conceptual positioning, the study aims to: (1) analyze digital transformation through the implementation of the General Procurement Plan Information System (SiRUP) in Papua Pegunungan Province; (2) analyze digital transformation through the implementation of e-Procurement; and (3) identify the implementation factors and contextual conditions that support or constrain the integration of SiRUP and e-Procurement in contributing to Good Governance. Through these objectives, the study seeks to provide both an empirical explanation of digital procurement implementation in Papua Pegunungan and a conceptual contribution by developing an adaptive digital procurement transformation model that connects policy implementation capacity, local geographical and sociocultural conditions, digital procurement processes, and Good Governance outcomes.

2. THEORETICAL FRAMEWORK AND HYPOTHESES

2.1 Digital Transformation in Public Procurement and E-Government

Digital transformation in the public sector should be understood as a broader organizational change rather than merely the conversion of manual activities into digital formats. Mergel et al. (2019) explain that digital transformation goes beyond digitization and digitalization because it involves holistic changes in organizational processes, structures, culture, and relationships with stakeholders. In the public sector, this means that introducing digital technology may require government organizations to reconsider how services are organized, how employees perform their tasks, and how public institutions interact with citizens and other stakeholders. This perspective is particularly relevant to public procurement because the introduction of electronic systems changes not only the medium through which procurement is conducted but also the processes of planning, documentation, coordination, supplier interaction, and oversight.

A similar perspective is offered by Vial (2019), who conceptualizes digital transformation as a process in which digital technologies trigger significant organizational changes and require organizations to respond by modifying their structures and value-creation processes. Vial's review demonstrates that digital transformation involves interactions among digital technologies, strategic responses, organizational changes, and structural barriers rather than technology operating independently. Accordingly, digital transformation in government procurement should not be assessed merely by whether electronic applications have been introduced. The more substantive question is whether digital technology has changed procurement processes, organizational capabilities, coordination mechanisms, information flows, and relationships among procurement actors.

Building on Mergel et al. (2019) and Vial (2019), this study distinguishes between the use of digital applications and substantive digital transformation. The electronic publication of procurement information or the electronic processing of particular procurement stages may represent digitization or digitalization, whereas digital transformation requires broader changes in organizational routines and institutional arrangements. In the context of public procurement, this means moving from fragmented application use toward a more integrated digital process connecting procurement planning, supplier selection, contracting, documentation, monitoring, and oversight. Thus, technology is treated in this study as an enabler of organizational and governance transformation rather than as the transformation itself.

2.2 SiRUP and E-Procurement as Instruments of Digital Procurement

In Indonesia, digital public procurement begins from the procurement planning stage through the General Procurement Plan Information System (SiRUP). According to the Lembaga Kebijakan Pengadaan Barang/Jasa Pemerintah (LKPP, 2026), SiRUP is an information system used to announce the General Procurement Plan (RUP) implemented by ministries, institutions, and regional governments. Its legal basis refers to Presidential Regulation Number 16 of 2018 concerning Government Procurement of Goods/Services and its

amendments. SiRUP therefore provides an institutional mechanism through which government procurement plans can be made electronically available before procurement implementation begins.

The Ministry of State Secretariat of the Republic of Indonesia (2025) further describes SiRUP as an electronic government procurement system supported by information technology and intended to improve efficiency, effectiveness, quality, and transparency in government procurement. From a governance perspective, these characteristics indicate that SiRUP should not be viewed simply as a technical application for uploading procurement packages. Rather, it constitutes part of the information infrastructure through which procurement plans become visible and accessible to relevant stakeholders.

Nevertheless, the governance value of SiRUP depends on the quality of the information entered into the system. Following the digital transformation perspective of Mergel et al. (2019), the presence of an electronic application alone does not constitute organizational transformation if the underlying processes remain fragmented or inconsistent. Similarly, Vial (2019) emphasizes that digital transformation involves organizational responses and structural changes surrounding technology. Applied to SiRUP, these perspectives suggest that substantive digitalization requires procurement data to be complete, accurate, timely, and connected with actual planning and budgeting processes.

E-Procurement extends this transformation beyond procurement planning into the implementation of procurement activities. Conceptually, its importance lies in the ability of electronic systems to reorganize interactions, documentation, information exchange, and transaction processes between government organizations and suppliers. In this study, SiRUP and e-Procurement are therefore treated as interconnected components of the same digital procurement transformation process. SiRUP represents the digital planning and disclosure dimension, whereas e-Procurement through SPSE represents the electronic implementation, documentation, and traceability of procurement activities. This integrated interpretation follows the broader argument of Mergel et al. (2019) and Vial (2019) that digital transformation should be understood across organizational processes rather than through isolated technological applications.

2.3 George C. Edwards III's Policy Implementation Framework

The implementation of digital procurement cannot be explained solely by the availability of technology. To understand why formally established electronic systems may produce different implementation outcomes, this study employs the policy implementation framework developed by George C. Edwards III (1980). Edwards III identifies four major factors that can facilitate or constrain public policy implementation: communication, resources, disposition, and bureaucratic structure. These dimensions provide an appropriate analytical framework for examining how formal digital procurement policies are translated into organizational practices.

The first dimension is communication. Edwards III (1980) emphasizes the importance of accurate transmission, clarity, and consistency of communication in policy implementation. Policies may encounter implementation problems when instructions are not properly transmitted, are unclear, or are interpreted inconsistently by implementing actors. In digital procurement, this dimension can be used to examine coordination among OPDs, UKPBJ, LPSE, procurement officials, system administrators, and suppliers, as well as technical guidance and the communication of procurement procedures.

The second dimension is resources. Edwards III (1980) identifies staff, information, authority, and facilities as critical resources for effective policy implementation. This dimension is particularly important in digital procurement because the successful operation of electronic systems requires competent procurement personnel, IT support, sufficient authority, reliable internet connectivity, digital equipment, facilities, and organizational support. Therefore, even when procurement regulations and digital systems are formally available, inadequate implementation resources can limit their effective utilization.

The third dimension is disposition, which refers to the attitudes and orientations of those responsible for implementing policy. Edwards III (1980) argues that implementation can be affected by the attitudes or dispositions of implementers toward the policy they are expected to execute. In the context of digital procurement, disposition can be reflected in commitment to electronic processes, willingness to reduce manual procedures, compliance with digital procurement requirements, integrity in implementation, and readiness to adapt to changes in procurement procedures.

The fourth dimension is bureaucratic structure. Edwards III (1980) explains that organizational structures can either facilitate or impede implementation. This dimension directs attention to the institutional arrangements within which procurement policies are implemented. In this study, bureaucratic structure is

examined through the organization of UKPBJ and LPSE, division of responsibilities, functional procurement positions, standard operating procedures, monitoring arrangements, and institutional coordination. These structural elements are important because digital procurement needs to become an organizational capability rather than remain dependent on particular individuals.

Taken together, Edwards III's (1980) four dimensions provide the principal policy implementation framework for this study. Communication explains how procurement policies and procedures are understood and coordinated; resources concern the capacity available for implementation; disposition concerns implementers' commitment and behavioral orientation; and bureaucratic structure concerns the organizational arrangements supporting implementation. Importantly, these four dimensions are treated as interrelated analytical categories rather than isolated variables or statistically tested causal relationships.

2.4 Good Governance in Digital Public Procurement

Good Governance provides the broader governance perspective for evaluating the significance of digital procurement. The World Bank (1992) introduced governance and institutional capacity as important elements in understanding how public authority and public resources are managed for development. Within public procurement, this perspective is particularly relevant because procurement involves the allocation and utilization of public resources and therefore requires institutional mechanisms that support responsible decision-making, accountability, and effective administration.

Digital procurement can provide mechanisms that support Good Governance because electronic systems can improve information availability, documentation, process traceability, and opportunities for oversight. However, following Mergel et al. (2019), digital transformation involves changes in organizational processes and stakeholder relationships rather than technology alone. This means that electronic procurement cannot automatically produce better governance simply because transactions or procurement information have been transferred to digital platforms. Governance outcomes continue to depend on how institutions and actors use those systems.

In this study, Good Governance is examined particularly through transparency, accountability, efficiency, integrity, competition, information openness, and oversight. Transparency concerns the accessibility of procurement information and procedures; accountability concerns the traceability of responsibilities and decisions; efficiency concerns the use of resources and administrative processes; integrity concerns ethical and rule-compliant conduct; competition concerns fair opportunities for providers; information openness concerns public accessibility to relevant procurement information; and oversight concerns the ability of authorized institutions to monitor and evaluate procurement processes.

The relationship between digital procurement and Good Governance is therefore understood as enabling rather than automatic. This distinction is consistent with Vial (2019), who demonstrates that the effects of digital transformation depend on organizational responses, structural changes, and barriers surrounding the use of technology. Electronic records may facilitate accountability, for example, but they cannot guarantee accountability when the information recorded is incomplete or inaccurate. Similarly, electronic supplier selection may support transparency and competition, but technology alone cannot guarantee procedural integrity.

Accordingly, Good Governance is positioned in this study as the intended governance orientation and potential outcome of high-quality digital procurement transformation. The analytical question is not whether SiRUP or SPSE automatically produces Good Governance, but whether their implementation creates and strengthens mechanisms supporting transparency, accountability, efficiency, integrity, competition, information openness, and effective oversight.

2.5 Geographical and Sociocultural Conditions as Contextual Factors

Although Edwards III (1980) provides a strong framework for explaining implementation through communication, resources, disposition, and bureaucratic structure, his framework primarily directs analytical attention toward factors closely associated with the implementation process and implementing organizations. The empirical context of Papua Pegunungan requires attention to the environment within which these dimensions operate. Therefore, this study does not replace Edwards III's framework but examines how geographical and sociocultural circumstances may condition its operation.

This contextualization is consistent with the broader digital transformation argument developed by Vial (2019). Vial explains digital transformation as a process in which organizations respond to changes and

disruptions in their environments through digital technologies while simultaneously dealing with structural changes and organizational barriers. This perspective provides a theoretical basis for recognizing that digital transformation is embedded within an organizational and environmental context rather than occurring independently from it.

Similarly, Mergel et al. (2019) demonstrate that public-sector digital transformation involves changes across organizations and their relationships with stakeholders. Their findings support an interpretation of government digital transformation that goes beyond technological adoption and includes organizational culture and interactions with external actors. For the present study, this perspective is important because procurement digitalization involves not only government officials but also providers and other actors who interact with the procurement system.

In Papua Pegunungan, geographical factors such as mountainous terrain, physical accessibility, and uneven connectivity are therefore treated as contextual conditions, rather than as new universal dimensions of Edwards III's framework. These conditions may shape the practical availability of resources, the ability to communicate and coordinate, access to digital systems, and the organization of procurement services. In the same way, sociocultural conditions may shape interactions among government officials, providers, and local stakeholders and therefore influence the environment in which procurement policies are implemented.

This theoretical positioning is important because the study does not claim that geographical and sociocultural conditions causally modify Edwards III's model. Instead, they are conceptualized as contextual conditions that may strengthen or constrain the practical operation of communication, resources, disposition, and bureaucratic structure. The empirical analysis subsequently examines whether and how these contextual conditions emerge in the Papua Pegunungan case.

2.6 Integrated Theoretical Framework

Based on these theoretical foundations, this study integrates digital transformation, policy implementation, digital procurement, and Good Governance into a single analytical framework. Mergel et al. (2019) provide the basis for understanding digital transformation as an organization-wide change extending beyond simple digitization, while Vial (2019) explains how digital technologies interact with organizational responses, structural changes, and barriers. Together, these perspectives support the distinction between merely operating procurement applications and achieving substantive digital procurement transformation.

At the implementation level, Edwards III (1980) provides four analytical dimensions – communication, resources, disposition, and bureaucratic structure – for examining the organizational conditions under which SiRUP and e-Procurement are implemented. At the operational level, LKPP (2026) establishes SiRUP as the information system for announcing government General Procurement Plans, providing the institutional basis for examining the digitalization of procurement planning. At the governance level, the World Bank (1992) provides the broader governance perspective through which the management of public authority and resources can be understood.

The resulting theoretical logic proposes that geographical and sociocultural conditions provide the implementation context within which Edwards III's four dimensions operate; communication, resources, disposition, and bureaucratic structure shape the implementation of SiRUP and e-Procurement; the implementation of these systems supports the transition from partial digitalization toward more integrated digital procurement transformation; and this transformation creates mechanisms that can support Good Governance. Importantly, these relationships constitute an analytical framework for qualitative inquiry, not predetermined causal relationships.

Accordingly, the theoretical framework can be summarized as follows:

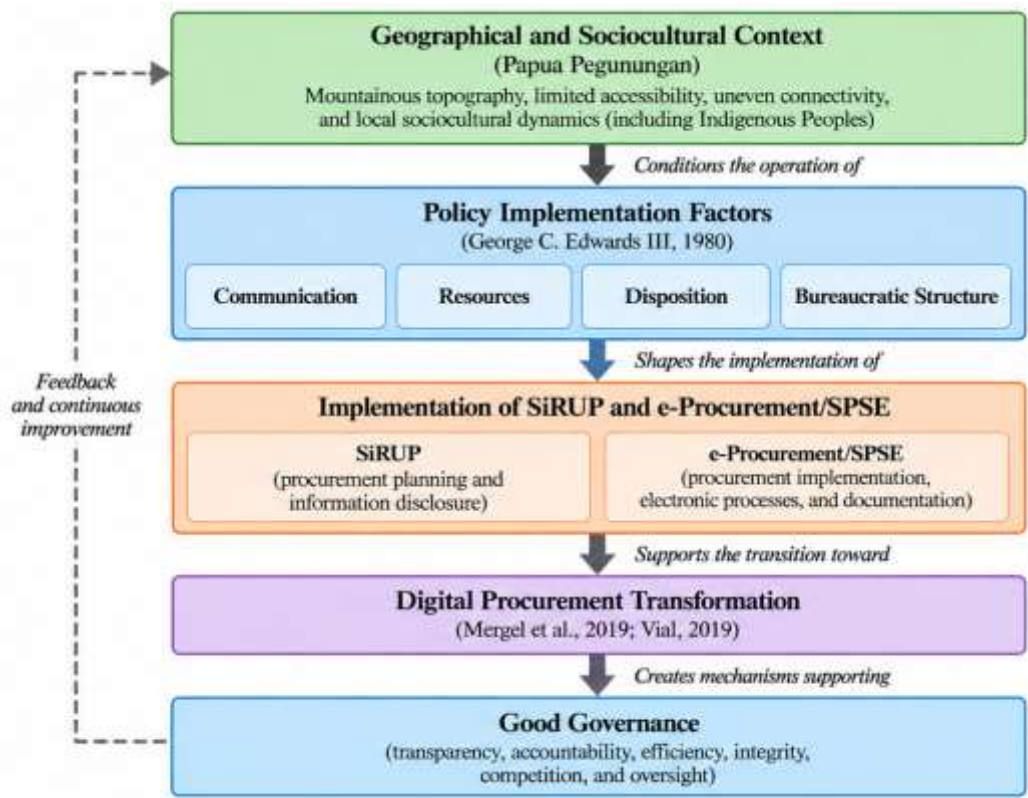


Figure 1. Theoretical Framework

This integrated framework provides the theoretical foundation for the empirical analysis and for the conceptual model developed from the research findings. The distinction is important: the framework in this section is theoretically derived, whereas the conceptual model presented after the coding results is empirically informed by the Papua Pegunungan case. The empirical findings can therefore confirm, contextualize, or refine the theoretical relationships rather than simply reproducing assumptions established before data analysis.

3. RESEARCH METHOD

This study employed a qualitative approach using a descriptive-explanatory case study design to examine the implementation process, supporting factors, barriers, and governance implications of the General Procurement Plan Information System (SiRUP) and e-Procurement in Papua Pegunungan Province. The case study design was selected because digital procurement implementation needs to be understood within the institutional, geographical, infrastructural, and sociocultural context of a newly autonomous region. Fieldwork was conducted from January to April 2026 at three research sites: the Goods and Services Procurement Bureau, the Department of Public Works and Spatial Planning, and the Department of Education and Culture of Papua Pegunungan Province. These sites were purposively selected to represent the provincial procurement coordination function, a local government agency responsible for high-value infrastructure projects, and a local government agency responsible for basic public services.

Eleven informants were selected through purposive sampling based on their direct involvement, institutional responsibilities, and substantive knowledge of procurement planning, SiRUP, e-Procurement/SPSE, procurement supervision, system administration, and participation as a provider. The informants represented the Regional Secretary, the Inspectorate, the Head of the Goods and Services Procurement Bureau, the manager of the Electronic Procurement Service (LPSE), the Selection Working Group, the system administrator, the Authorizing Officer (PPK), two Procurement Officers, the SiRUP administrator, and an Indigenous Papuan (OAP) provider. Informant recruitment and interviewing continued until information adequacy was reached, indicated by the recurrence of key themes concerning communication, resources, institutional arrangements, system utilization, geographical constraints, and sociocultural conditions, with

later interviews providing confirmation and elaboration rather than substantially new categories. This approach ensured that perspectives from policy coordination, procurement management, supervision, system administration, implementing agencies, and providers were represented in the analysis.

Primary data were collected through direct observation and semi-structured interviews. Interviews were conducted face-to-face at the informants' respective offices between January and April 2026, with each interview lasting approximately 45–75 minutes. The interview guide covered the implementation of SiRUP and e-Procurement, communication and coordination, human and technological resources, implementer commitment, bureaucratic arrangements, geographical and sociocultural constraints, digital transformation, and implications for Good Governance. With the informants' consent, interviews were audio-recorded and supplemented with field notes, after which the recordings were transcribed verbatim and organized for analysis using NVivo. Secondary data were obtained from General Procurement Plan (RUP) documents, procurement documents, relevant regulations, SiRUP/SPSE data, and the 2025 Procurement Governance Index (ITKP) assessment documents. The combination of interview, observational, documentary, and system-related evidence enabled the implementation process to be examined from multiple perspectives.

Data credibility was strengthened through source, technique, and time triangulation, extended observation, increased diligence in examining the data, and member checking. Source triangulation was conducted by comparing information obtained from informants occupying different institutional positions. Technique triangulation compared interview evidence with direct observations, procurement documents, SiRUP/SPSE information, and ITKP assessment data. Time triangulation was performed by revisiting selected issues at different stages of fieldwork to examine the consistency of information provided by key informants. Member checking was conducted by confirming the interpretation of important statements and preliminary findings with selected informants to minimize misinterpretation and ensure that the researchers' interpretations remained consistent with the participants' experiences.

Data analysis followed the interactive model of Miles, Huberman, and Saldaña (2014), consisting of data condensation, data display, and conclusion drawing and verification. Analysis was conducted iteratively alongside data collection so that emerging findings could inform subsequent interviews and document examination. NVivo was used to organize interview transcripts, field notes, and relevant documentary material. During open coding, the researchers examined the data line by line to identify meaningful statements concerning implementation conditions, barriers, supporting factors, perceived benefits, institutional capacity, system utilization, and governance outcomes. Similar codes were continuously compared and refined to reduce duplication while retaining differences in informants' experiences.

The second stage involved axial coding, in which related open codes were compared, connected, and consolidated into broader analytical categories. This process generated seven axial categories: geographical and sociocultural conditions, communication, bureaucratic structure, resources, disposition, digital transformation of procurement, and Good Governance. Communication, resources, disposition, and bureaucratic structure were interpreted using George C. Edwards III's policy implementation framework, while geographical and sociocultural conditions were positioned as contextual factors that could strengthen or constrain the operation of these four implementation dimensions. Digital transformation of procurement represented changes in processes associated with SiRUP and e-Procurement, while Good Governance captured the broader governance implications related to transparency, accountability, efficiency, integrity, competition, information openness, and oversight. These seven categories correspond to those subsequently presented in the empirical findings.

In the final stage, selective coding was used to integrate the seven axial categories and identify the central relationship connecting the empirical findings. This process resulted in the core category: "Optimizing the Digital Transformation of Procurement by Strengthening the Implementation of the General Procurement Plan Information System (SiRUP) and e-Procurement Adapted to the Conditions of Papua Pegunungan to Achieve Good Governance." The core category reflects the finding that procurement digitalization cannot be explained solely by the availability of technological applications but emerges from the interaction between local contextual conditions, implementation capacity, system utilization, and governance orientation. The same core category is reported in the manuscript's selective coding results.

The final analytical stage integrated the empirical coding results with George C. Edwards III's policy implementation framework, digital transformation/e-Government, and Good Governance. The relationships identified through selective coding were synthesized into an empirically informed conceptual model

explaining how geographical and sociocultural conditions contextualize communication, resources, disposition, and bureaucratic structure; how these dimensions shape the implementation of SiRUP and e-Procurement; and how implementation contributes to broader digital procurement transformation and Good Governance. Because the study uses a qualitative case study design, the proposed model is interpreted as a conceptual representation of relationships identified from the empirical evidence rather than as a statistically tested causal model.

The overall research process is summarized in Figure 2.

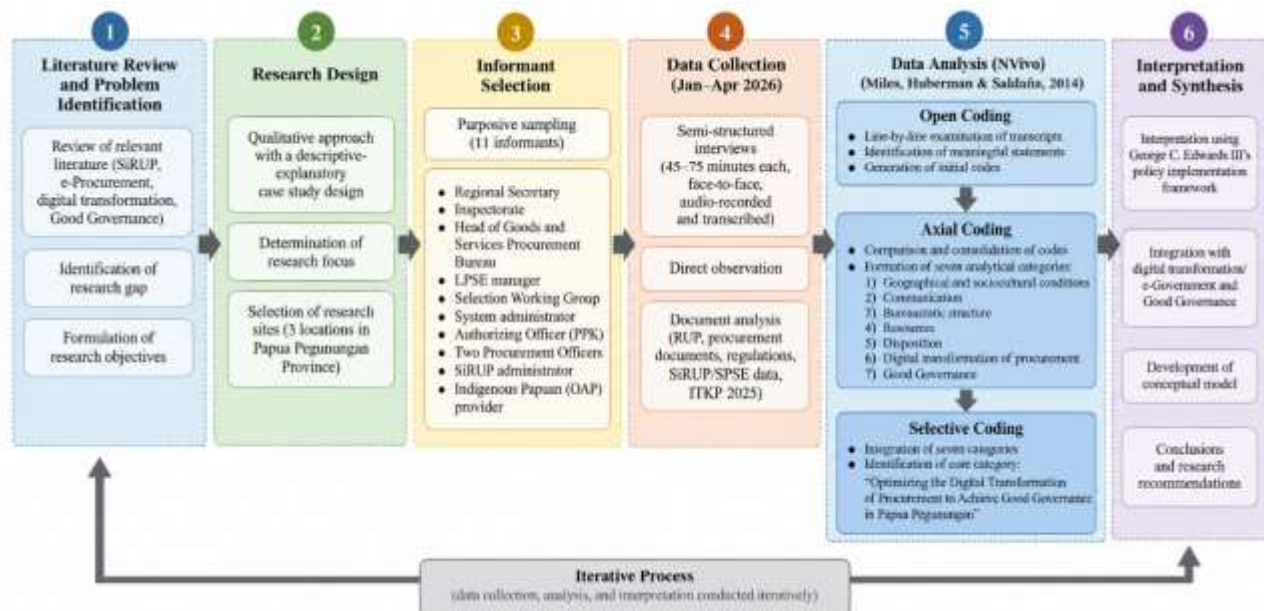


Figure 2. Research Stages

Figure 2 illustrates the research process beginning with the literature review and problem identification, followed by the selection of the qualitative case study design, determination of the research focus, sites and informants, and data collection. Empirical data were subsequently organized and analyzed using NVivo through open coding, axial coding, and selective coding. The resulting categories were interpreted through George C. Edwards III's policy implementation framework and the geographical and sociocultural context of Papua Pegunungan, and then integrated with the perspectives of digital transformation and Good Governance. The final synthesis generated the conceptual model, research propositions, conclusions, and practical recommendations.

4. DATA ANALYSIS AND DISCUSSION

4. RESULTS

4.1 Initial State of Procurement Governance

The findings indicate that the transition toward electronic procurement in Papua Pegunungan Province has begun, although implementation remains uneven across procurement stages and electronic systems. Tendering and supplier selection have increasingly utilized the Electronic Procurement System (SPSE), whereas some direct procurement activities continue to rely on manual procedures. The General Procurement Plan Information System (SiRUP) has also been used to publish procurement packages, but the completeness, accuracy, and timeliness of the information entered into the system remain inconsistent. These conditions indicate that the province has entered the digitalization process, but electronic procurement has not yet become fully integrated across planning, implementation, and monitoring.

The interview findings are consistent with the 2025 Procurement Governance Index (ITKP). Papua Pegunungan recorded an overall ITKP score of 29.94, categorized as "Inadequate." Procurement system utilization scored 7.72, while SiRUP and e-Purchasing each recorded 0.00, e-Tendering 3.28, and e-Contracts 4.44. Procurement human-resource competency also received a score of 0.00, while UKPBJ maturity reached 22.22. Taken together, these indicators show that the primary empirical challenges concern system utilization,

procurement personnel capacity, and institutional maturity.

Table 1. Procurement Governance Index (ITKP) Scores

Indicator	Score	Interpretation
ITKP	29.94	Inadequate
Procurement system utilization	7.72	Not yet optimal
General Procurement Plan Information System (SiRUP)	0.00	Very low/not timely
e-Tendering	3.28	Not yet optimal
e-Contracts	4.44	Relatively better
e-Purchasing	0.00	Not yet optimal
Procurement HR competency	0.00	Very low
UKPBJ maturity	22.22	Not yet optimal

Source: ITKP Assessment Document for Papua Pegunungan Province, 2025.

These quantitative indicators are used as supporting documentary evidence rather than as standalone measures of causal relationships. Their primary function in this qualitative case study is to contextualize the institutional conditions described by the informants.

4.2 Open and Axial Coding Results

Open coding of the interview transcripts identified recurring statements concerning implementation conditions, institutional constraints, system utilization, perceived benefits, and requirements for strengthening digital procurement. Through comparison and consolidation of related initial codes, the analysis generated seven axial categories: (1) geographical and sociocultural conditions, (2) communication, (3) bureaucratic structure, (4) resources, (5) disposition, (6) digital transformation of procurement, and (7) Good Governance. At this stage, the categories are presented as empirical patterns derived from the interview and documentary data. Their theoretical interpretation through George C. Edwards III's framework, digital transformation, and Good Governance is presented separately in the Discussion.

4.2.1 Geographical and Sociocultural Conditions

Geographical conditions emerged consistently as a constraint on digital procurement implementation. Papua Pegunungan's mountainous topography, limited interregional accessibility, and uneven internet connectivity affect both government officials and providers in accessing and using electronic procurement systems.

"The geographical conditions of the Papua Highlands also pose a challenge, as network quality is not yet uniform" (Acting Head of the Electronic Procurement Services Division).

The interviews also revealed a sociocultural and security dimension that extends beyond technical connectivity. A Selection Working Group informant reported:

"In addition, there is still pressure and threats from some suppliers who did not win the tender" (Selection Working Group).

The empirical evidence therefore indicates that implementation barriers originate both within and outside procurement organizations. Connectivity, physical accessibility, local interaction patterns, and security concerns form part of the environment in which digital procurement is implemented.

4.2.2 Communication

Communication occurred through coordination meetings, consultation, outreach, technical guidance, assistance, and synchronization between procurement plans and budgets. However, the consistency of communication varied across institutions and implementation stages.

"We've been communicating intensively to ensure the procurement process proceeds in accordance with regulations" (Procurement Officer, Department of Education and Culture).

A contrasting account was provided by the Regional Secretary:

"Yes, coordination is still ongoing, but lately it hasn't been going well – perhaps because we've been busy, or maybe due to time constraints and other factors. As a result, most of the time I've had no idea about the progress" (Regional Secretary of Papua Pegunungan Province).

These accounts indicate that communication mechanisms exist, but coordination is not yet consistently institutionalized. Differences in the continuity of information exchange also affect the timely completion of procurement planning and implementation activities.

4.2.3 Bureaucratic Structure

The findings reveal that the institutional structure supporting procurement is still developing. Key issues include unfilled functional procurement positions, limitations in LPSE services, the organization of procurement personnel, standard operating procedures, and monitoring arrangements.

“As for functional positions in the Goods and Services Procurement Bureau, we do not yet have any, and we plan to allocate quotas next year; we have already received 20 quotas from the Ministry of State Apparatus and Bureaucratic Reform” (Selection Working Group).

Another informant stated that:

“The LPSE’s services are not yet optimal” (Procurement Officer, Department of Education and Culture).

The findings therefore show that electronic procurement is being implemented while its supporting institutional structure remains under development. This condition creates dependence on existing personnel and organizational arrangements that have not yet reached full institutional maturity.

4.2.4 Resources

Resources emerged as one of the most frequently reported implementation constraints. The interview data identified limitations involving procurement personnel, IT personnel, competency certification, budget support, internet connectivity, digital equipment, and LPSE facilities.

“It is not yet fully adequate because the number of working group members who hold PBJ competency certificates is still limited; some still hold concurrent positions in other OPDs and not all have the same level of experience in handling complex procurement packages” (Selection Working Group).

“Limitations in IT human resources mean that resolving technical issues sometimes takes a very long time” (Acting Head of the LPSE Division).

“The most common obstacle at present is internet network disruptions or limitations” (Acting Head of the LPSE Division).

“There are currently no service facilities for suppliers, including computer labs for training, bidding rooms, or supporting facilities that meet the standards set by the LKPP” (Head of the Goods and Services Procurement Bureau).

These findings indicate that resource constraints are multidimensional. Human-resource limitations interact with infrastructure, connectivity, facilities, and budget availability, creating cumulative constraints on the effective utilization of SiRUP and e-Procurement.

4.2.5 Disposition

The interviews generally indicate a positive orientation toward procurement digitalization. Implementers expressed support for expanding electronic procurement, reducing manual procedures, and strengthening transparency. However, commitment to digitalization has not always been accompanied by consistent implementation.

“Local governments need to accelerate the implementation of electronic systems for all direct procurement packages so that we can minimize manual processes” (Procurement Officer, Department of Public Works and Public Housing).

At the same time, incomplete preparatory documents and incomplete submission of procurement plans remain evident:

“The most common obstacle is that the preparatory documents from the PPK are incomplete” (Selection Working Group).

“There are still many OPDs that have not submitted their general procurement plans (RUP) in full through the General Procurement Plan Information System (SiRUP)” (Head of the Goods and Services Procurement Bureau).

Thus, the empirical evidence reveals a gap between positive attitudes toward digitalization and consistent compliance in everyday procurement practices.

4.2.6 Digital Transformation of Procurement

Informants perceived electronic procurement as improving documentation, transparency, accountability, efficiency, and monitoring.

“Digital transformation has had a very positive impact because the procurement process has become more transparent, accountable, efficient, and easier to monitor” (Procurement Selection Working Group).

However, implementation remains partial. SPSE is used predominantly for tendering and selection, while some direct procurement processes continue to be conducted manually. SiRUP is operational, but incomplete and delayed procurement planning data remain evident. The findings therefore characterize digital procurement in Papua Pegunungan as being in a **consolidation phase**, moving from fragmented or partial digitalization toward a more integrated electronic procurement process.

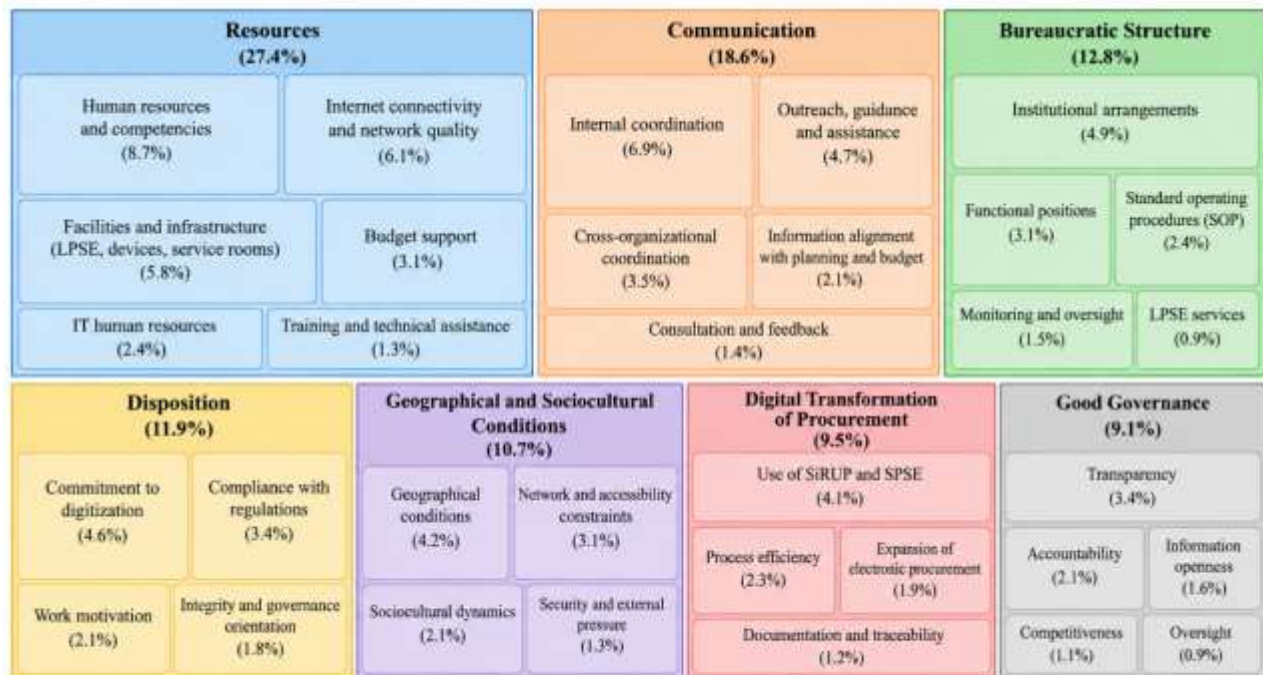
4.2.7 Good Governance

The findings indicate that electronic procurement provides mechanisms that support transparency and accountability, particularly through information availability, electronic documentation, and traceable procurement records.

“The use of an electronic procurement system for oversight is actually a fairly effective tool for improving transparency, accountability, and the ease of tracking documents” (Regional Inspectorate).

Nevertheless, electronic systems do not independently guarantee governance quality. Interview evidence also points to the importance of data quality, procedural compliance, implementer integrity, evaluation accuracy, provider capacity, and effective oversight. Thus, digital systems provide an institutional mechanism for strengthening governance, while their actual governance value remains dependent on implementation quality.

4.3 Hierarchy of Coding Results



Source: Data analysis results using NVivo, 2026.

Note: The area of each box represents the proportion of coded references. Percentages indicate the share of total coded references within each category.

Figure 3. Hierarchy Chart of Research Coding Results

Source: Data analysis results using NVivo, 2026.

Figure 3 summarizes the distribution of coded references across categories and subcategories. The visualization shows that Resources and Communication account for a relatively prominent proportion of the

coded material. Within these categories, informants frequently discussed procurement personnel readiness, competencies, connectivity, digital infrastructure, LPSE facilities, budget support, training, technical assistance, and coordination.

The relative size of categories in the hierarchy chart should not be interpreted as statistical importance or causal strength. Rather, it represents the frequency and volume of material coded within each theme. The visualization therefore provides descriptive support for identifying recurring empirical concerns, while relationships among categories were subsequently examined through selective coding.

4.4 Selective Coding and Core Category

Selective coding integrated the seven axial categories to identify the central empirical pattern connecting the findings. The resulting core category was formulated as:

“Optimizing the Digital Transformation of Procurement by Strengthening the Implementation of the General Procurement Plan Information System (SiRUP) and e-Procurement Adapted to the Conditions of Papua Pegunungan to Achieve Good Governance.”

The core category reflects a recurring pattern in the empirical data: the central challenge is not the absence of procurement digitalization, but the incomplete integration and institutionalization of digital procurement. Communication, resources, disposition, and bureaucratic arrangements are interconnected with geographical and sociocultural conditions, while SiRUP and e-Procurement constitute the operational mechanisms through which digital procurement is implemented.

At this stage, these relationships are treated as qualitative patterns emerging from the data. Their theoretical interpretation and implications for the proposed conceptual model are discussed in the following section.

4.5 Discussion

The findings demonstrate that digital procurement transformation in Papua Pegunungan cannot be understood simply in terms of whether SiRUP and SPSE are available or used. The more important analytical issue concerns the institutional conditions under which these technologies become embedded in procurement practices. The Discussion therefore interprets the empirical findings through three interconnected perspectives: George C. Edwards III’s policy implementation framework, digital transformation, and Good Governance, while geographical and sociocultural conditions are treated as contextual factors emerging from the case.

4.5.1 From Electronic Applications to Digital Procurement Transformation

The findings show that SiRUP has improved the visibility and structure of procurement planning information, while e-Procurement through SPSE has strengthened electronic documentation, reduced direct interaction, and facilitated monitoring during tendering and selection. These findings are consistent with Dharmawan and Widiyarta (2025), Mu’ah et al. (2024), Ratnawati and Suryawan (2021), and Habibi and Untari (2018), who associate e-Procurement with greater effectiveness, transparency, accountability, efficiency, participation, and oversight.

However, the Papua Pegunungan case also demonstrates an important distinction between digitization and digital transformation. The existence of SiRUP and SPSE does not necessarily indicate that the entire procurement process has been transformed. Incomplete SiRUP data, delayed submission of procurement plans, continuing manual direct procurement, and uneven integration across procurement stages indicate that technology has been introduced more rapidly than the organizational processes required to institutionalize it. This finding supports the broader digital transformation perspective that transformation involves changes in processes, organizational capabilities, coordination, and value creation rather than merely the conversion of manual activities into electronic formats (Mergel et al., 2019; Vial, 2019).

SiRUP is therefore better understood as more than an administrative publication mechanism. Its contribution to digital transformation depends on whether procurement data are complete, accurate, timely, synchronized with budgeting, and actually used for planning and decision-making. Similarly, SPSE contributes to transformation when electronic processes extend beyond selected procurement methods and become integrated into broader organizational routines. The Papua Pegunungan case consequently demonstrates a transition from partial digitalization toward institutionalized digital procurement transformation.

4.5.2 Reinterpreting Edwards III in the Context of Papua Pegunungan

The findings strongly correspond with George C. Edwards III's four implementation dimensions. Communication problems appear in inconsistent coordination and continuing needs for technical assistance. Resource limitations include insufficient certified procurement personnel, IT capacity, connectivity, budget support, and LPSE facilities. Disposition is reflected in generally positive attitudes toward digitalization, although implementation compliance remains uneven. Bureaucratic structure is evident in unfilled functional positions, institutional immaturity, limitations in LPSE services, and the continuing need to strengthen procedures and oversight.

These findings are broadly consistent with Firmansyah et al. (2024), Taufik et al. (2025), Pratama et al. (2026), Satria et al. (2021), and Habibi and Untari (2018), who emphasize the importance of human resources, technology, infrastructure, procedures, organizational arrangements, budgets, and oversight in electronic procurement implementation. The Papua Pegunungan case, however, provides an additional contextual insight: the operation of these implementation dimensions occurs within unusually demanding geographical and sociocultural conditions.

This is where the theoretical contribution of the study should be positioned carefully. The findings do not demonstrate that geographical and sociocultural conditions constitute additional universal dimensions of Edwards III's model. Rather, they indicate that these conditions contextualize the operation of the existing dimensions. Uneven connectivity directly shapes the adequacy of resources; physical distance affects communication and technical assistance; difficult terrain influences procurement planning and package preparation; and sociocultural pressures may affect implementer disposition, institutional independence, and the practical operation of bureaucratic procedures.

Accordingly, this study extends the contextual application of Edwards III rather than claiming to replace or universally modify the original framework. The explanatory value added by the Papua Pegunungan case lies in showing that the four implementation dimensions are embedded in territorial and social environments. In infrastructure-constrained and newly autonomous regions, similar levels of formal policy commitment may therefore produce different implementation experiences because the surrounding context conditions how communication, resources, disposition, and bureaucratic structure operate.

4.5.3 Geographical and Sociocultural Conditions as Contextual Moderators of Implementation

The geographical findings are particularly significant because digital procurement is often expected to reduce the constraints of physical distance. In Papua Pegunungan, however, digitalization does not automatically eliminate geographical disadvantage. Uneven connectivity may reproduce accessibility problems in digital form, while difficult transportation conditions continue to affect technical specifications, material availability, cost estimation, and project readiness. Digital procurement therefore remains connected to the physical environment in which procurement packages are planned and implemented.

The sociocultural findings add another layer. Pressure or threats experienced by procurement personnel cannot be reduced to a technical system problem. Electronic procurement can reduce unnecessary face-to-face interaction and improve traceability, but the independence and integrity of procurement decisions remain influenced by the wider institutional and social environment. This reinforces the finding that technology functions as an enabler, rather than an automatic producer, of Good Governance.

An adaptive implementation approach is therefore conceptually different from lowering procurement standards. Adaptation means adjusting communication, technical assistance, service mechanisms, digital access, and institutional support to local conditions while maintaining transparency, objectivity, competition, and regulatory compliance. This distinction is particularly important for local providers and Indigenous Papuan Business Actors (OAP), whose participation in digital procurement may depend on both formal access to electronic systems and the practical capacity to use them.

4.5.4 Digital Procurement and Good Governance

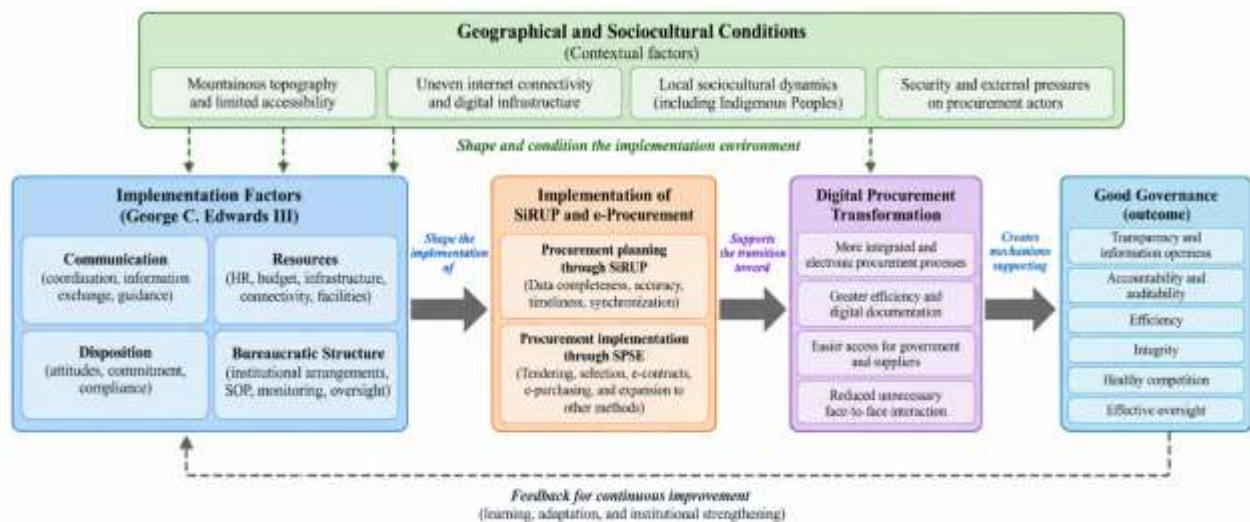
The empirical evidence supports an association between digital procurement and several dimensions of Good Governance. Electronic records improve traceability; SiRUP increases access to planning information; SPSE documents supplier selection; and electronic processes can reduce unnecessary direct interaction. Together, these mechanisms can support transparency, accountability, efficiency, integrity, competition, and oversight.

Nevertheless, the findings also demonstrate that Good Governance should not be treated as an automatic technological outcome. An electronic audit trail has limited value if the underlying data are incomplete. Electronic selection does not automatically ensure fair competition if specifications, evaluations, or implementation practices are problematic. Likewise, transparency through SiRUP remains incomplete when procurement plans are delayed or only partially entered.

The relationship identified in this study is therefore conditional: digital procurement creates governance-enabling mechanisms, while implementation quality determines how far those mechanisms translate into substantive governance improvements. This distinction advances the discussion beyond a technology-centered interpretation and positions digital procurement transformation as an organizational and governance process.

4.5.5 Empirically Informed Conceptual Model

Based on the integration of open coding, axial coding, selective coding, and theoretical interpretation, this study proposes the Adaptive Digital Procurement Transformation Model for Papua Pegunungan. The model should be understood as an empirically informed conceptual model derived from this qualitative case, rather than as a statistically validated causal model.



Note: The model is empirically informed from qualitative findings and should be interpreted as an analytical framework, not a statistically validated causal model.

Figure 4. Empirically Informed Model of Adaptive Digital Procurement Transformation

The first relationship is derived from evidence showing that geographical accessibility, connectivity, and sociocultural conditions intersect with communication, resource availability, implementer behavior, and institutional arrangements. The second relationship reflects findings that these implementation dimensions shape the completeness of SiRUP utilization, electronic procurement coverage, LPSE capacity, and organizational ability to institutionalize digital processes. The third represents the observed difference between fragmented application use and broader transformation of procurement processes. Finally, the relationship with Good Governance reflects the role of electronic information, audit trails, process documentation, reduced direct interaction, and oversight as governance-enabling mechanisms.

These relationships are presented as analytical propositions arising from the case rather than deterministic causal pathways. Future research could therefore examine whether similar relationships occur in other newly autonomous, geographically isolated, or infrastructure-constrained regions.

4.5.6 Theoretical Contribution and Relationship with Previous Research

The findings both confirm and extend previous research. Consistent with Dharmawan and Widiyarta (2025), Mu'ah et al. (2024), Ratnawati and Suryawan (2021), and Habibi and Untari (2018), this study confirms that electronic procurement can strengthen transparency, accountability, efficiency, and oversight. Consistent with Firmansyah et al. (2024), Taufik et al. (2025), Pratama et al. (2026), and Satria et al. (2021), it also demonstrates the central importance of human resources, infrastructure, organizational arrangements, and institutional capacity. Similarly, the findings complement Hasyim et al. (2022) and Nur Singgih and Rizki Anla

Pater (2022) by showing that SiRUP effectiveness depends on planning and data quality, institutional compliance, communication, digital competence, and synchronization between planning and budgeting.

The contribution of this study lies in integration and contextualization. First, SiRUP and e-Procurement are interpreted as interconnected stages of a broader procurement transformation rather than as isolated applications. Second, the study demonstrates how Edwards III's four implementation dimensions operate within a specific geographical and sociocultural environment. Third, it connects implementation capacity with the transition from partial digitization to broader digital transformation and subsequently with governance-enabling mechanisms.

The theoretical contribution should therefore not be framed as the discovery of a universally applicable replacement for Edwards III's framework. Instead, the findings suggest a context-sensitive extension of its application: policy implementation dimensions remain central, but their practical operation can be conditioned by territorial accessibility, digital infrastructure, institutional maturity, and sociocultural circumstances. This proposition may be analytically relevant beyond Papua Pegunungan, particularly for newly autonomous and infrastructure-constrained regions, although comparative research is required before broader generalization can be made.

4.5.7 Practical Implications

The empirical findings also generate several practical implications for Papua Pegunungan Province. Strengthening digital procurement requires coordinated improvement rather than isolated technological intervention. Priority areas include improving the completeness and accuracy of RUP data; progressively expanding electronic procurement across methods that can be digitally implemented; strengthening procurement and IT competencies; filling functional procurement positions; improving UKPBJ and LPSE institutional capacity; strengthening connectivity and digital infrastructure; and providing accessible assistance to local providers and Indigenous Papuan Business Actors (OAP).

Monitoring should consequently move beyond measuring whether electronic applications are available. It should examine the quality of RUP data, timeliness of procurement planning, reduction of manual procedures, system utilization, procurement personnel competency, supplier accessibility, transparency, competition, integrity, and auditability. In this way, progress can be evaluated as an institutional transformation rather than simply as increasing application usage.

The practical recommendations should nevertheless be interpreted within the scope of this qualitative case study. Their relevance is strongest for Papua Pegunungan and potentially for regions facing comparable institutional and infrastructural constraints; their effectiveness should be evaluated through subsequent implementation and comparative research.

5. CONCLUSION, IMPLICATION, SUGGESTION, AND LIMITATIONS

The findings indicate that digital transformation through the General Procurement Plan Information System (SiRUP) and e-Procurement has begun in Papua Pegunungan Province but has not yet developed into a fully integrated digital procurement process. SiRUP has supported the preparation and publication of the General Procurement Plan (RUP) and increased the visibility of procurement information; however, its implementation continues to face delayed and incomplete data entry, changes in activities and budgets, inconsistent data quality, uneven coordination, and differences in user competence. Similarly, e-Procurement has improved the transparency, documentation, efficiency, traceability, and oversight of tendering and selection processes, but its implementation remains partial because some direct procurement activities are still conducted manually and the institutional and technical capacity of the Electronic Procurement Service (LPSE) requires further strengthening. Overall, the findings demonstrate that digital procurement transformation in Papua Pegunungan involves more than the adoption of electronic applications; it requires the institutionalization of digital processes across procurement planning, implementation, monitoring, and oversight.

Theoretically, this study supports the relevance of George C. Edwards III's four implementation dimensions – communication, resources, disposition, and bureaucratic structure – in explaining the implementation of digital procurement. However, the findings also indicate that these dimensions operate within specific geographical and sociocultural environments. Mountainous terrain, uneven internet connectivity, limited physical accessibility, local sociocultural dynamics, and external pressures surrounding procurement processes can shape how communication occurs, how resources can be accessed, how implementers perform their responsibilities, and how bureaucratic arrangements function in practice. Therefore, geographical and

sociocultural conditions are not proposed as universal replacements or additional causal dimensions of Edwards III's framework, but as contextual factors that condition the operation of its four implementation dimensions. This provides a context-sensitive interpretation of policy implementation that may be particularly relevant to newly autonomous, geographically isolated, and infrastructure-constrained regions.

From a practical perspective, the Papua Pegunungan Provincial Government needs to approach digital procurement as an institutional transformation rather than merely a technology implementation program. The provincial government and OPDs should improve the completeness, accuracy, consistency, and timeliness of RUP data and strengthen coordination between procurement planning and budgeting. The UKPBJ and LPSE should strengthen procurement and IT human-resource competencies, accelerate the fulfillment of functional procurement positions, improve internet connectivity and digital infrastructure, and provide adequate facilities for electronic procurement services. The gradual expansion of electronic processes to procurement methods that are still conducted manually is also necessary to reduce fragmentation between planning and implementation. At the same time, technical assistance and accessible digital services should be strengthened for local suppliers and Indigenous Papuan Business Actors (OAP) so that the expansion of digital procurement does not create new barriers to participation.

The practical implications also extend to procurement governance. Digital systems should be accompanied by stronger monitoring, procedural compliance, data quality control, implementer integrity, and protection for procurement personnel in carrying out objective procurement decisions. Performance monitoring should therefore move beyond measuring whether SiRUP and SPSE are available or used. Evaluation should also consider the timeliness and accuracy of procurement planning, reduction of manual processes, user competency, system accessibility, supplier participation, process efficiency, transparency, competition, integrity, auditability, and effectiveness of oversight. In this sense, Good Governance should be understood as an outcome supported by digital procurement mechanisms but still dependent on the quality and consistency of their implementation.

This study has several limitations. First, it employed a single-case qualitative design focused specifically on Papua Pegunungan Province; therefore, the findings should not be generalized directly to all Indonesian provincial governments. Second, the study involved eleven purposively selected informants, whose perspectives provide in-depth information but do not represent every actor involved in the provincial procurement ecosystem. Third, data collection was concentrated in the Goods and Services Procurement Bureau, the Department of Public Works and Spatial Planning, and the Department of Education and Culture, meaning that implementation experiences in other OPDs may not be fully represented. Fourth, Papua Pegunungan has distinctive geographical, infrastructural, institutional, and sociocultural characteristics as a newly autonomous region. Consequently, the relative importance of the contextual factors identified in this study may differ in regions with more mature institutions, stronger digital infrastructure, or different sociocultural environments. Finally, the proposed Adaptive Digital Procurement Transformation Model is an empirically informed conceptual model derived from qualitative findings and theoretical interpretation; it should not be interpreted as a statistically validated causal model.

Future research should therefore examine the proposed model through comparative and longitudinal designs. Comparative studies involving other provinces in Papua, newly autonomous regions, and regions with different levels of digital and institutional maturity could determine which relationships are context-specific and which may have broader analytical relevance. Longitudinal research could examine whether improvements in human-resource competencies, UKPBJ and LPSE maturity, connectivity, SiRUP data quality, and broader utilization of electronic procurement lead to sustained improvements in procurement governance over time. Future quantitative or mixed-method studies may also empirically test the relationships proposed in the conceptual model. In this way, subsequent research can assess whether the context-sensitive relationships identified in Papua Pegunungan are transferable beyond this case and further refine understanding of how digital procurement transformation can contribute to transparent, accountable, efficient, inclusive, and adaptive public governance.

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