Development of an LPPBJ Accreditation System as an Implementation of Digital Governance in Public Procurement

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Abstract.

This study addresses the challenge of translating regulatory accreditation requirements into executable and secure information system workflows for public procurement training providers (LPPBJ). Current accreditation practices often rely on manual procedures and fragmented digital tools, resulting in limited traceability and increased information security risks. To address these issues, an LPPBJ accreditation system is developed using a business process–driven system development approach in accordance with the Decree of the Head of the National Public Procurement Agency (LKPP) Number 201 of 2024. Regulatory provisions are analyzed and modeled using Business Process Model and Notation (BPMN) and subsequently implemented into an integrated information system that enforces workflow constraints across accreditation submission, document management, assessment, scoring, and result determination. The system integrates the assessment process directly within the application, enabling controlled, system-based evaluation by assessors. Role-based access control and audit trail mechanisms are applied to enhance document security, confidentiality, and process traceability. The results show that the proposed system improves regulatory compliance, process integration, and accountability, demonstrating the effectiveness of BPMN-based development for compliance-oriented digital governance systems.

Keywords: *Acreditation System; BPMN; Business Process Modeling; Digital Governance; Information System Security and Public Procurement..*

I.   INTRODUCTION

Accreditation plays a critical role in ensuring quality, accountability, and consistency in institutional performance, particularly within public governance-related sectors. In the domain of public procurement, the accreditation of Public Procurement Training Providers (Lembaga Penyelenggaraan Pelatihan Pengadaan Barang/Jasa - LPPBJ) functions as a quality assurance mechanism to ensure compliance with established standards and to support the development of competent procurement professionals. Recent studies emphasize that effective accreditation systems must be supported by transparent, traceable, and digitally enabled processes to maintain institutional credibility and governance effectiveness in regulated public-sector environments [1], [2].To strengthen the governance of LPPBJ accreditation, the Government of Indonesia enacted the Decree of the Head of the National Public Procurement Agency (LKPP) Number 201 of 2024, which establishes the Guidelines for the Implementation of Accreditation of Public Procurement Training Providers as the formal regulatory framework governing accreditation procedures [11]. However, despite the existence of this regulation, practical implementation remains challenging due to difficulties in translating regulatory provisions into executable workflows and information systems. Prior research indicates that accreditation and compliance processes are still frequently supported by manual procedures or fragmented digital tools, such as external document storage platforms, which increase risks related to information security, data confidentiality, process traceability, and consistency of assessment outcomes [2], [5], [6]. This situation highlights a persistent gap between normative regulatory requirements and operational system execution.

From an information systems perspective, bridging this gap requires a structured and formal approach to business process modeling prior to system implementation. Business Process Model and Notation (BPMN) has been widely adopted as a standard method for representing business processes in a clear, formal, and stakeholder-oriented manner. Recent studies demonstrate that BPMN is particularly effective in compliance-oriented and e-government systems, as it enables regulatory requirements to be

translated into verifiable and enforceable process models before being implemented in software systems [3], [7], [8]. Accordingly, this study proposes the development of an LPPBJ accreditation system using a business process–driven system development approach, with Business Process Model and Notation (BPMN) as the foundation for modeling accreditation workflows in accordance with the Decree of the Head of LKPP Number 201 of 2024 [11]. The proposed system integrates accreditation submission, document management, assessment, scoring, and decision-making processes within a single platform. Assessment activities that were previously conducted manually and outside the system are embedded directly into the application, enabling assessors to perform document evaluation and scoring in a controlled and auditable environment. Supported by role-based access control and audit trail mechanisms, the system enhances document security and confidentiality, ensures process traceability and accountability, and strengthens transparency and governance in LPPBJ accreditation.

II.   METHODS

Based on the regulatory requirements identified in the previous stage, the LPPBJ accreditation workflow is modeled using Business Process Model and Notation (BPMN) to formally represent the sequence of activities, decision points, and role responsibilities defined in the Decree of the Head of LKPP Number 201 of 2024. BPMN is selected due to its capability to provide a standardized and unambiguous representation of business processes that can be jointly validated by technical developers and regulatory stakeholders.
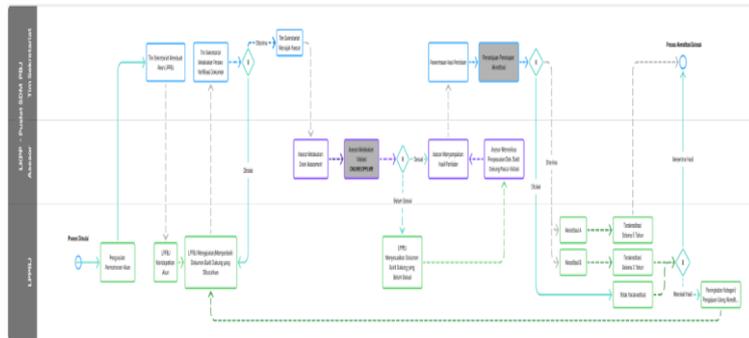

Fig 1. High-level BPMN of the LPPBJ accreditation process.

Fig.1 presents the high-level BPMN model of the LPPBJ accreditation process. This model illustrates the end-to-end accreditation workflow, starting from account application and verification, continuing through document submission and assessment, and concluding with the determination of accreditation results. The high-level BPMN serves as an overview of the accreditation lifecycle and ensures that all mandatory regulatory stages are represented before further system detailing is performed.
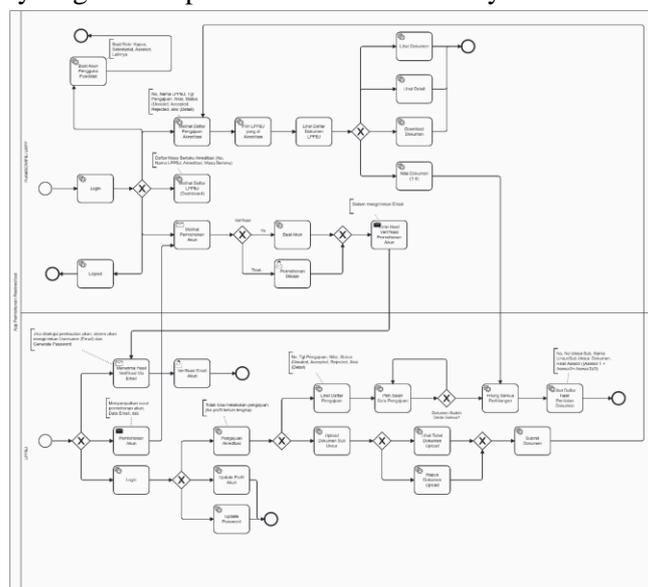

Fig 2. Detailed BPMN of the LPPBJ accreditation and assessment system.

To provide a more detailed and system-oriented representation, Fig. 2 depicts the detailed BPMN model of the accreditation and assessment process. This model elaborates system-level activities, including user account management, accreditation submission, document upload based on assessment components, assessor-led document evaluation, scoring, and system-based calculation of accreditation results. Swimlane notation is applied to clearly distinguish the roles and responsibilities of key actors, namely LPPBJ, assessors, and the secretariat. Exclusive gateways are used to enforce procedural constraints, such as verification outcomes, completeness of document submission, and completion of assessment activities prior to result calculation.The detailed BPMN model explicitly embeds the accreditation assessment process within the system, replacing previous practices where document evaluation and scoring were conducted manually or outside the system environment. By enforcing workflow constraints at the BPMN level, the model ensures that assessment activities cannot proceed unless prerequisite conditions are satisfied, thereby supporting procedural consistency and regulatory compliance.The BPMN models presented in Fig. 1 and Fig. 2 function not only as documentation artifacts but also as design blueprints for system implementation. They enable traceability between regulatory provisions, business processes, and system functionalities, and serve as a validation mechanism to ensure that no regulatory steps are omitted prior to implementation. These validated BPMN models are subsequently used as the basis for mapping process activities to system modules, as discussed in the following section.

III.   RESULT AND DISCUSSION

This section presents the results of the BPMN-based system development, followed by an evaluation and discussion of its compliance, functional behavior, and governance impact. The evaluation focuses on how the developed system enforces regulatory requirements, integrates assessment activities, and improves security and traceability compared to previous practices.The implementation of the LPPBJ accreditation system successfully operationalizes the BPMN models presented in Fig. 1 and Fig. 2 into an integrated information system. All accreditation stages, ranging from account registration and accreditation submission to assessment, scoring, and determination of accreditation results, are executed within the system according to predefined workflow constraints.A key result of the implementation is the full integration of the accreditation assessment process into the system. Assessment activities that were previously conducted manually or outside the system environment are now embedded within the application, enabling assessors to perform document evaluation, scoring, and result calculation in a controlled and auditable manner. This integration ensures procedural consistency and reduces the risk of deviations from regulatory workflows.

Evaluation of Regulatory Compliance

The first evaluation dimension assesses the system's compliance with the Decree of the Head of LKPP Number 201 of 2024. Compliance is evaluated by mapping regulatory requirements to BPMN activities and corresponding system modules. Table 1 demonstrates that all mandatory regulatory procedures are explicitly represented in the BPMN models and consistently enforced at the system level. This confirms that the system implementation aligns with regulatory requirements and supports compliance-oriented system design.

Tabel 1. Regulatory Compliance Evaluation

Regulatory Requirement	BPMN Representation	System Implementation	Compliance Status
Account verification	Verification task & gateway	Account validation module	Compliant
Accreditation submission	Submission workflow	Accreditation submission module	Compliant
Document-based assessment	Assessment activities	System-based scoring module	Compliant
Decision enforcement	Exclusive gateways	Workflow constraints	Compliant
Accreditation result determination	Final decision task	Automated result calculation	Compliant

Evaluation of Process Integration and Consistency

The second evaluation examines how effectively the system integrates accreditation workflows and enforces process consistency.

Tabel 2. Process Integration Evaluation

Evaluation Aspect	Previous Practice	Proposed System
Assessment execution	Manual / off-system	Fully system-based

Document management	External storage	Integrated document repository
Workflow enforcement	Procedural guidance	System-enforced constraints
Assessment completeness	Manual checking	Automatic validation
Process traceability	Limited	Fully traceable

As shown in Table 2, the proposed system significantly improves process integration by embedding all accreditation activities within a single platform. The use of BPMN-based workflow enforcement ensures that accreditation steps cannot be bypassed, thereby improving consistency and reducing procedural errors.

Evaluation of Security and Traceability

Security and traceability are evaluated by examining access control and activity logging mechanisms implemented in the system.

Tabel 3. Security and Traceability Evaluation

Security Aspect	Implementation Approach	Impact
Access control	Role-based access control	Fully system-based
Document confidentiality	Account-based document ownership	Integrated document repository
Activity logging	Audit trail mechanism	Full process traceability
Assessment integrity	System-based scoring	Prevents unauthorized changes

The implementation of RBAC and audit trail mechanisms enhances document security and confidentiality by ensuring that only authorized users can access sensitive accreditation data. Compared to previous practices that relied on external document storage, the proposed system provides stronger institutional control over accreditation information. The combined results and evaluation demonstrate that the BPMN-based system implementation effectively bridges the gap between regulatory requirements and operational system execution. By translating regulatory provisions into structured BPMN workflows and enforcing them at the system level, the developed system supports regulatory compliance, procedural consistency, and governance objectives. Furthermore, the integration of assessment activities into the system improves objectivity and accountability by reducing manual intervention and enabling systematic traceability. These findings are consistent with recent studies on BPMN-based compliance systems and digital governance, which emphasize the importance of process-driven system design in regulated environments.

IV. CONCLUSION

This study has presented the development of an LPPBJ accreditation system based on a business process–driven system development approach, referring to the Decree of the Head of the National Public Procurement Agency (LKPP) Number 201 of 2024. Regulatory requirements were systematically analyzed and translated into Business Process Model and Notation (BPMN) models, which were subsequently implemented into an integrated information system. The results demonstrate that BPMN effectively serves as a bridge between normative regulatory provisions and executable system workflows, ensuring consistency, procedural correctness, and regulatory compliance. The implementation successfully integrates the accreditation assessment process into the system, replacing previous manual and off-system practices. By embedding document evaluation, scoring, and result determination directly within the application, the system improves process consistency, auditability, and accountability. Furthermore, the application of role-based access control and audit trail mechanisms enhances document security and confidentiality, reduces the risk of information leakage, and strengthens institutional control over accreditation data. Overall, the proposed system supports an accreditation process that is objective, transparent, accountable, and systematically traceable, aligning with the principles of digital governance in public procurement.

Despite these contributions, this study has several limitations that open opportunities for future research. The current implementation focuses on enforcing regulatory workflows and process integrity but does not yet incorporate quantitative performance metrics, such as processing time analysis or workload distribution among assessors. Future work may extend this system by integrating process performance analytics, advanced decision-support features, and automated compliance monitoring. In addition, further studies could explore the application of formal process analysis or graph-based techniques to evaluate

process complexity, detect bottlenecks, and optimize accreditation workflows. These enhancements would further strengthen the effectiveness and scalability of digital accreditation systems in regulated public-sector environments.

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