



Enhancing Administrative Efficiency and User Satisfaction Through BPM-Based Digital Archiving: Case of SINDE in West Java Province

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Abstract

This study investigates the implementation of the Electronic Official Manuscript System (SINDE) at the West Java Education Quality Assurance Agency (BBPMP) to evaluate its impact on administrative efficiency and user satisfaction through a Business Process Management (BPM) perspective. The objective is to determine how a digital filing system, when supported by structured process optimization, can improve public sector performance. Using a mixed-methods approach, the study combines survey data from 45 users, in-depth interviews with 9 key informants, and document analysis to assess pre- and post-implementation outcomes. Study findings indicate that SINDE significantly improves workflow efficiency, reduces paper use and operational costs, and enhances document security. Most users expressed satisfaction with the system's ease of use and speed, although concerns were raised regarding occasional system downtime, lack of training, and continued reliance on manual processes. The study confirms that integrating BPM principles into digital transformation initiatives supports improved service delivery and accountability in public administration. However, the system's success also depends on organizational readiness, ongoing capacity development, and alignment with the national digital infrastructure. The implications suggest that for digital archiving systems like SINDE to reach their full potential, institutions must invest in technical reliability, staff training, and change management strategies. This research contributes to the broader discourse on e-government implementation and offers practical recommendations for optimizing digital systems in the public sector.

Keywords: business process management, digital archiving, e-government, public sector efficiency, user experience

1. Introduction

The rapid development of information and communication technology (ICT) has transformed public sector administration, especially in developing countries that seek to modernize bureaucratic functions through digital innovation (Chan et al., 2025; Wei & Zhang, 2025; Wirjatmi et al., 2024). In Indonesia, according to (Kencono et al., n.d.) revealed the transition from conventional paper-based processes to digital governance systems is driven by national policies such as Presidential Regulation No. 95 of 2018 concerning Electronic-Based Government Systems (SPBE), which aims to increase transparency, efficiency, and accountability in the delivery of public services (Eka Susilawati & Yanti, 2023; Eldin et al., 2024).

Digital filing systems, particularly Electronic Document Management Systems (EDMS), are increasingly recognized as key drivers of administrative efficiency in the public sector (Gani et al., 2024; Kokogho et al., 2024; Pramod Kumar Muppala, 2025). Among these systems, the Electronic Official Manuscript System (SINDE), a specialized EDMS developed by the Indonesian Ministry of Education, Culture, Research, and Technology, has been implemented in various administrative units to streamline correspondence, document tracking, and archiving processes. (Afriзал & Wallang, 2021; Maulana et al., 2022) However, the effectiveness of such systems depends not only on technological

capabilities but also on the extent to which their implementation aligns with organizational workflows and user needs (Maharani & Iswary Lawanda, 2023). Therefore, implementing Business Process Management (BPM) provides a structured approach to process identification, reengineering, and optimization to ensure that digital systems deliver tangible administrative improvements (Dumas & DKK, 2021).

This study examines the implementation of SINDE at the West Java Province Education Quality Assurance Center (BBPMP) as a case study of how BPM-based digital archiving contributes to administrative efficiency and user satisfaction in a public educational institution. While previous studies have explored the general impact of e-government platforms and EDMS in the public sector (Hawkins, 2022; Mustaking, 2024; Siregar & Syakrani, 2023), few have evaluated their integration with BPM frameworks or measured their effectiveness through user-centered, qualitative outcomes (Desmal et al., 2022; Karniawati, 2021; Tambun et al., 2025). This gap in the literature underscores the need for a more in-depth investigation of how digital transformation strategies are operationalized in public sector organizations and their real-world implications for administrative performance. (Errida & Lotfi, 2021; Kaur Bagga et al., 2023)

The purpose of this paper is twofold: first, to assess how a BPM framework can be applied to evaluate and improve the effectiveness of SINDE in streamlining administrative processes; and second, to measure the level of user satisfaction with the system, focusing on aspects such as usability, efficiency, and reliability. The scope of this study includes descriptive qualitative method analysis and Likert-scale questionnaires as supporting data with key stakeholders, document analysis, and interviews with administrative staff at BBPMP. This study hypothesizes that effective implementation of SINDE with a structured BPM approach results in measurable improvements in time efficiency, cost reduction, reduction in administrative burden, and increased user satisfaction.

By integrating the theoretical perspective of Business Process Management with practical insights into digital archiving systems in the Indonesian public sector, this study contributes to a better understanding of the role of digital innovation in improving public administration. These findings are expected to provide strategic recommendations for other government units seeking to align digital transformation initiatives with internal process optimization and stakeholder needs.

2. Methods

This study uses a descriptive qualitative approach with a case study method to gain a comprehensive understanding of the implementation and effectiveness of the Electronic Official Document System (SINDE) at the Center for Education Quality Assurance (BBPMP) of West Java Province. This qualitative design allows triangulation of findings from various data sources to ensure the validity and reliability of conclusions, and is based on the principles of Business Process Management (BPM) life cycle analysis which include identification, discovery, analysis, redesign, implementation, and monitoring of processes (Bouncken et al., 2025). This model is applied to assess and improve administrative efficiency and user satisfaction related to the use of SINDE. The study population includes BBPMP West Java employees directly involved in processing administrative documents using SINDE, consisting of administrative staff, archivists, department heads, and supervisors at the managerial level. A purposive sampling technique was used to select 9 key informants for qualitative interviews, with selection criteria focusing on the frequency and depth of SINDE use, as well as familiarity with the administrative workflow before and after system implementation.

Primary data collection was conducted through semi-structured interviews to explore contextual experiences, system usability issues, operational challenges, and process adaptations, allowing for in-depth insights into SINDE's integration into business processes. Furthermore, document analysis and observations were conducted to examine administrative cycle duration, document handling procedures, and evidence of systemic efficiency or errors. A structured questionnaire with a Likert scale (1 to 5) was also distributed to 45 staff members as a supporting tool to complement the qualitative findings by collecting data on user satisfaction, perceived system efficiency, ease of use, and technical reliability. Data from the interviews and observations were analyzed using thematic analysis, with coding categories derived from the BPM framework and the research objectives. Technical triangulation techniques were used to ensure the validity of the findings. According to (Bans-Akutey & Tiimub, 2021) the study, technical triangulation is used to test the credibility of data by examining sources using various techniques such as comparing interview results, observations, and document analysis. Thus, the resulting conclusions will illustrate the extent

to which SINDE implementation brought about changes and increased administrative efficiency, while also providing recommendations for application improvements to optimize its performance.

3. Results and Discussion

3.1. Results

This section presents the findings from the quantitative and qualitative data analysis based on the research objectives: (1) to evaluate the improvement in administrative efficiency after the implementation of SINDE, (2) to assess user satisfaction with the system, and (3) to identify technical and non-technical barriers that affect system performance. The implementation of SINDE showed measurable improvements in several dimensions of efficiency such as document processing time, physical resource utilization, and data security.

Discussion of the research part of the description of how the results of research which can be known whether it can be confirmed or unconfirmed so find answers to research questions of each variable / research hypothesis.

Display the table as below:

Efficiency Indicators	Before SINDE	After SINDE	Increase (%)
Average Document Processing Time	3–5 business days	1–2 business days	50–66% faster
Document Search Time	>15 minutes	<3 minutes	80% reduction
Paper Use per Month (perception/estimate)	High quantity	Low quantity	important
Annual Stationery Inventory Value	Rp. 9,410,000 (2017)	Rp. 1,424,500 (2019)	84.8% reduction

Table 1. Comparison of Administrative Efficiency Before and After SINDE Implementation

Source: Processed from BBPMP internal documentation and survey responses (2025)

These results confirm that SINDE effectively reduces processing time and operational costs, while improving document traceability and security. The use of real-time tracking and structured archiving results in greater workflow transparency and reduced redundancy in administrative procedures. Table 2 illustrates that user satisfaction is measured based on the system's usability, reliability, and functional support, as analyzed from survey responses and interview data. Table 2 illustrates that user satisfaction is measured based on the system's usability, reliability, and functional support, as analyzed from survey responses and interview data.

Indicator	Very good(%)	Good (%)	Bad (%)	Very bad (%)
Ease of Navigation	48.9%	46%	2.2%	0%
Document Loading Speed	37.8%	53.3%	8.9%	0%
Frequency of Technical Disturbances	4.4%	73.3%	20%	2.2%
Help Features and Support Access	26%	28.9%	13.3%	0%
Overall Satisfaction	29.27%	50.37%	11.1%	2.2%

Table 2. User Satisfaction with the SINDE System

Source: Survey of 45 SINDE users at BBPMP West Java (2025)

The majority of users expressed satisfaction with the system's ease of use and faster document processing. However, some users expressed concerns about occasional system downtime when accessing SINDE and the lack of readily accessible training or technical support, particularly during critical reporting periods. Furthermore, Table 3 shows that interviews revealed both technical and non-technical issues that hindered optimal use of SINDE. Table 3. Identified Technical and Non-Technical Barriers

Barrier Category	Information	Frequency (n = 9)
Technical Barriers	System down, slow loading speed, insufficient backup, error, system crash, bad signal, server, hacked, document unreadable, upload failed, bug, server unstable, cannot be completed, power outage.	9/9 participants
Obstacle Non-Technical	Resistance to change, continued use of manual drafts, lack of coordination, lack of awareness in the use of SINDE, leadership policies.	9/9 participants
Lack of Training	Lack of formal user training or orientation modules, having to learn on your own, lack of understanding of features.	5/9 participants
Integration Gap	SINDE is not yet synchronized with the national SRIKANDI platform, not yet integrated with Android/iOS, not yet connected, not yet recorded properly.	5/9 participants

Table 3. Identified Technical and Non-Technical Barriers

Source : Transcript of interviews with administrative staff and managers (2025)

These findings indicate that while SINDE's technical infrastructure supports increased efficiency, its full potential is still hampered by inadequate user training and barriers to transitioning to a digital work culture. Furthermore, the system's lack of interoperability with broader e-government frameworks limits strategic integration.

3.2 Discussion

The findings of this study comprehensively confirm that the implementation of SINDE aligns with the literature emphasizing the role of ICT and Business Process Management (BPM) (Dumas & dkk, 2021; Pramod Kumar Muppala, 2025) in improving administrative performance. Hypothesis 1 was strongly confirmed, as evidenced by (Gani et al., 2024; Rachmad et al., 2024; Zhang et al., 2022) measurable improvements in supporting efficiency in terms of time and cost, including a 66% reduction in document processing time and an 84.8% reduction in operational costs. These data clearly demonstrate that SINDE, when integrated with a BPM framework, successfully streamlines workflows. However, Hypothesis 2 was (Desmal et al., 2022; Maharani & iswary Lawanda, 2023; Rillan et al., 2025) only partially confirmed. While the majority of users expressed satisfaction with the ease of navigation and speed of the system, significant concerns remained regarding technical glitches and a lack of user support. This suggests that the benefits of technology can be eroded if not supported by system reliability and adequate training.

Furthermore, Hypothesis 3 regarding implementation barriers was fully confirmed through qualitative findings. The study found that non-technical factors, such as employee reluctance to shift from manual methods and inadequate onboarding programs, were the main barriers. These findings confirm that the success of digital transformation depends not only on the quality of the technology itself, but also on organizational readiness and a comprehensive change management strategy (Kaur Bagga et al., 2023). Therefore, for SINDE to reach its full potential, continuous technical improvements, increased interoperability, and strong institutional support, especially in terms of training and a digital work culture, are needed.

4. Conclusion

Study comprehensively examines the implementation of the Electronic Official Document System (SINDE) at BBPMP West Java from a Business Process Management (BPM) perspective and finds that this technology integration has successfully achieved its objectives, albeit with some challenges.

The study results strongly indicate that SINDE significantly improves measurable administrative efficiency. This improvement extends beyond quantitative data, such as a 66% reduction in document processing time and an 84.8% reduction in operational costs, to qualitative improvements such as transparency and traceability of workflows. However, the study yielded mixed results regarding user satisfaction. While the majority of users expressed satisfaction with the system's ease of navigation and speed, concerns raised about technical downtime and a lack of training support reduced overall

satisfaction levels. This demonstrates that the success of technology depends not only on features but also on operational reliability and adequate support.

These findings confirm the theoretical relevance of BPM as a critical framework for digital transformation. Successful implementation involves more than just installing software, but also redesigning business processes and managing change effectively. Identified challenges, such as staff reluctance to change and lack of training, emphasize that investment in non-technical aspects, such as change management and capacity building, is just as important as investment in the technology itself.

For future research, it is recommended to conduct cross-institutional comparative studies to evaluate the scalability of SINDE. Furthermore, longitudinal research can provide valuable insights into how digital maturity evolves and how ongoing interventions impact institutional performance. Overall, this study contributes to the e-government literature by providing empirical evidence that integrating BPM and ICT is key to driving innovation, accountability, and improving public services.

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