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Digital Transformation: Innovation and Efficiency in East Java Bawaslu Operational Management

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ABSTRACT

This research examines the digital transformation in the operational management of Bawaslu East Java, focusing on how digital technology improves efficiency and drives innovation in election oversight. Digital transformation includes process digitalization, integrated systems, and data-driven decision-making, which streamline workflows, reduce costs, accelerate responses, and foster innovation in public services. Using a qualitative approach, the study explores strengths, weaknesses, opportunities, and threats, involving policymakers and technical implementers across 38 districts. Findings highlight that the *Rumah Data* innovation significantly enhances Bawaslu's performance by centralizing data management, improving transparency, and increasing responsiveness.The analysis places Rumah Data in a promising strategic position, demonstrating that aggressive development strategies effectively sustain innovation within operations. The research recommends proactive actions to strengthen positive drivers—such as capacity building, system integration, and data quality improvement—while mitigating risks that could weaken innovation outcomes.Ultimately, this study concludes that digital transformation is crucial for achieving efficient, transparent, and adaptive election oversight. Immediate and strategic interventions are necessary to ensure Rumah Data continues to deliver long-term organizational benefits and supports the achievement of Bawaslu's strategic objectives.

Keywords: digital transformation, east java bawaslu, innovation, rumah data,

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Introduction

Digital transformation has become a major agenda in public administration reform in various countries, including Indonesia. The digital disruption era, marked by the Fourth Industrial Revolution, requires the bureaucratic apparatus to adapt to the shift in public administration paradigms from conventional models to more effective and efficient digital technology-based models (Navi Muda Priyatna, 2024). In the Indonesian context, efforts to transform the digital bureaucracy have been integrated into various national policy instruments (Anindya Saffa et al., 2025). RPJMN 2020–2024 and the Grand Design for Bureaucratic Reform. Presidential Regulation Number 95 of 2018 establishes the legal basis for the development of e-government in Indonesia by incorporating the Electronic-Based Government System (SPBE), (Sadam et al., 2024),(Yusriadi & Misnawati, 2017).

Policies at Bawaslu are determined collectively. Collective collegial is a leadership model that emphasizes cooperation, equality, and collective responsibility in managing an organization, with equal standing in the decision-making process. (Don Bosco Doho et al., 2020), The purpose of the collective collegial principle is to ensure a transparent, fair decision-making process that is free from potential abuse of authority. As an independent election organizer, this system allows each leader to actively participate in policy development, maintain independence, and increase the institution's accountability(Rakhman, 2023). This system requires all leaders to make strategic decisions or important policies collectively, so no one person has complete control over decision-making. Some problems with the collegial collective leadership model are that they make decision-making unproductive and slow. Different interpretations among members often occur; on the other hand, this system can lead to lengthy processes and risks causing prolonged conflicts or disagreements. (Wathoni, 2024). Organizational conflict management theory, digital era theory, and performance are studied using an approach focused on organizational management, communication from actors and external parties, and how these factors influence performance. (Binti & Darus, 2024).

Supervision itself has a myriad of regulations that sometimes limit institutions in innovating to facilitate supervision. The spirit of bureaucratic reform to achieve the same goals is key. In the course of democracy, it will surely find its own way. There is no fixed standard for what ideal democracy looks like, because different countries have different methods and cultures. (Hintalo et al., 2024). Access to information, which was previously limited to official and elite sources, is now widely open thanks to the internet and search engines. (Bajari et al., 2025). Consequently, society has a greater ability to verify facts, compare perspectives, and form opinions independently. Innovation in improving supervisory management is the implementation of an information technology-based monitoring system. This system allows for real-time supervisory control across all provinces in East Java, enabling the management of such a large number of supervisors and the immediate detection of potential violations. making the follow-up process and law enforcement faster and more efficient, while also having an impact on improving human resources (Angga Wahyudi et al., 2023). Has this digital transformation already addressed how a surveillance system using IoT can meet the challenges of the times, integrated management automation, and a series of future surveillance challenges (Laura et al., 2024), (Zhu et al., 2020).

The East Java Bawaslu has launched an innovation called "Rumah Data." This platform is designed to systematically and integrally administer monitoring results reports. This makes data management and analysis more efficient, and access to monitoring results information is easy. Displaying statistics as a command center, this innovation not only makes monitoring more systematic but also serves as self-protection for the organization, ensuring that every process runs with high transparency and integrity. The presence of digital reporting applications like Bawaslu RI's Sigap Lapor also makes it easier for the public to report violations with concrete evidence.With thousands of supervisors in East Java spread across various levels, from 176 supervisors at the district/city level, 1,998 Panwascam in 666 sub-districts, approximately 8,500 village ward supervisors, and tens of thousands of polling station supervisors, it's no surprise that millions of Form A (Research Results Reports) were collected. Form A is not just a piece of paper, but a recording. It is their responsibility to oversee it with meticulous care, recording observations

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from the visible to hidden anomalies. They then carefully analyze the data, looking for potential problems. They carefully ensured that each stage of the process proceeded according to procedure, as established. In this study, the problem statement is elaborated as follows:How does digital transformation affect the effectiveness of operational management within the East Java Provincial Bawaslu.

Method

This research uses a qualitative method type and approach. This approach was chosen because it provides an opportunity for the researcher to explore data in depth related to individuals' behavior, views, and experiences. stating that qualitative methods are capable of systematically explaining phenomena based on individual perspectives, thus generating theories or concepts thru the inductive approach that characterizes them. This research was initiated by the East Java Provincial Election Supervisory Agency during the evaluation of the Rumah Data innovation transformation. The location of this research is within the working scope of the East Java Bawaslu, out of a total of 38 districts/cities, SWOT analysis is the systematic identification of various factors based on logic that can maximize strengths and opportunities while simultaneously minimizing weaknesses and threats.

Results And Discussion

Following the regional elections, the East Java Provincial Bawaslu is intensively conducting a comprehensive evaluation of the use of data houses, a crucial moment aimed at comprehensively measuring their effectiveness and impact. This evaluation is conducted by dissecting the Rumah Data from two main perspectives, internal and external, with a focus on identifying the strengths, weaknesses, opportunities, and threats that arise during its use.

To obtain the most accurate and relevant picture, the East Java Provincial Bawaslu believes that the best perspective for measuring the quality and performance of the Rumah Data lies in the users' point of view. The objective evaluations from these users serve as the primary foundation for the assessment, delving deeply into the level of detail they experienced when interacting with the data home system. The evaluation process involves the heads of the election supervisory bodies in each district/city and data management staff as the main respondents. They are seen as both users and key figures in utilizing the data house, making their opinions and experiences highly valuable.

In-depth interviews, structured questionnaires, and focus group discussions were used to collect rich and in-depth data. This data was then carefully analyzed to identify areas for improvement, maximize existing potential, and mitigate potential future risks. The results of this evaluation will serve as an important foundation for the East Java Provincial Bawaslu in formulating more effective and responsive Rumah Data development strategies for future elections.Series of activities in processing data includes several crucial stages. using the SWOT (Strengths, Weaknesses, Opportunities, Threats)(Freddy Rangkuti, 2004) approach, in order to evaluate the strengths, weaknesses, opportunities, and threats of Rumah Data innovation.

First, identify the key elements, which are the SWOT factors, and then weigh them, starting with the most prioritized factors with high values down to the points with the lowest values, with an emphasis on relevant aspects to find common threads and existing trends (data reduction). Next, this information is presented in a structured format relevant to the analysis's objectives (data display). Finally, a final conclusion is reached, which brings forth tentative hypotheses and makes previously unrevealed details of a phenomenon clearer (conclusion drawing) or verifies them.

Bawaslu Chairpersons in the Districts/Cities were asked about the strengths, weaknesses, opportunities, and threats to the data center. The questionnaire yielded many arguments that influenced the data center. To make it easier for us, we present them in the following table 1:

Table 1. Strength Factor Matrix

No.	Strengths	S
1	Assisting in preparing the response at the Constitutional Court	0.58
2	To accommodate surveillance files that have been scattered and poorly documented until now.	0.39
3	Supervisory control tools at every level	0.39
4	Developing a long-term policy plan (for the upcoming election)	0.37

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5	Transparent and accountable statistical displays make control easier.	0.37
6	Highly valued by the public and fellow organizers.	0.30
7	Enhancing collectivity and collegiality	0.28
8	Can be accessed anytime, anywhere.	0.26
9	Implementing Good and Correct Supervision Procedures	0.26
10	Crucial data needed by leaders to make policies.	0.19
11	Detailed and Systematic Data	0.18
12	Notifications/Reminders for violations	0.17
	Total	**3.73**

Table 1 shows the internal factors of the strengths possessed by the data house. As internal elements that significantly influence innovation within the context of the data house, they play a crucial role in shaping the direction of development and implementation of new solutions. The analysis results show that these factors successfully scored a positive 3.73, indicating a strong perception of the data house's internal capabilities and resources.

The factor with the highest score is "Helping to prepare answers at the Constitutional Court," which received a score of 0.58. This indicates that the innovation capability to assist in preparing answers at the Constitutional Court is the most prominent strength in the factor analysis of the data house's capabilities. Conversely, the aspect with the lowest score is, "Notifications/Reminders if there are violations," which received a score of 0.17. This indicates that the notification or reminder feature for violations is a technical issue.

Table 2. Weakness Factor Matrix

No.	Weaknesses	Score
1	Quick search feature not yet available, slow access.	0.43
2	Not integrated with other systems.	0.33
3	There are no regulations for data houses.	0.30
4	There is no validation mechanism.	0.28
5	Lack of support from other divisions	0.27
6	limited access	0.27
7	There is no feature for monitoring the system at each stage yet.	0.23
8	Human resources and facilities at the lowest level are inadequate, and the completion of audit reports (LHP) is slow.	0.20
9	Not application-based	0.19
10	Doesn't cover all the data	0.18
11	Lack of trust in the monitoring results from the data house	0.11
	Total	**2.78**

Based on Table 2 regarding weaknesses, there is a variation in scores indicating the extent to which each factor is considered a weak point. The highest score is "Not available" for the "quick search, slow access" feature, with a score of 0.43, indicating that users consider the speed of searching and accessing data to be the most significant weakness in the system. These limitations can hinder the effectiveness of quickly finding important information, which directly impacts the productivity and efficiency of using the data warehouse. When the information search process is slow, it can lead to delays in decision-making during the open plenary session where the KPU recapitulates the results with time constantly ticking away, especially in highly dynamic environments such as election monitoring or critical data management. Thus, increasing access speed and responsive search features became a top priority for improving system performance.

The lowest score was distrust of monitoring results at the data house, with a score of 0.11. This was considered the least significant weakness compared to other issues. This means that, overall, both internal and external Rumah Data users are relatively more confident in the quality of the data presented, although there are still some doubts. However, this did not become a significant weakness, as this factor proved to have a smaller impact within the overall system performance context.

Overall, the weakness score is 2.78, indicating that there are some areas that need improvement. However, the main focus should be directed toward improving search features and access speed, as these have the greatest impact on user experience and operational effectiveness. By understanding the varying levels of urgency of these weaknesses, improvement efforts can be prioritized on the issues that have the

greatest impact, namely improving access and search speed, so that the system as a whole can operate more efficiently and provide timely information for decision-making.

Table 3. Opportunity Factor Matrix

No.	Opportunities	Score
1	Back up data	0.50
2	Data Display for the Public as an Expression of Bawaslu's Existence	0.40
3	Collaborating with IT experts	0.37
4	Sources for democratic development research	0.37
5	Copyright for Data House	0.37
6	integrated with all data such as HR, Prevention, and Supervision Tools.	0.35
7	Automated Information Analysis	0.35
8	Adding new features to improve the performance of the data house.	0.30
9	Development of Election/Local Election Results	0.27
10	collaborating with BSSN for data security	0.18
11	It can enhance cooperation with other stakeholders as strategic partners.	0.17
	Total	**3.64**

Opportunities include external factors; from the table, the factor with the highest score is Back up data with a score of 0.50. This indicates that anticipating data loss is considered extremely important, and data backups ensure that all information is protected and has a significant effect, serving as the foundation for uninterrupted system operations and data security. Meanwhile, the factor with the lowest score is "Can improve cooperation with other stakeholders as strategic partners" with a score of 0.17. It is assumed that not all data is open, as there is excluded data within the data house. In this factor, cooperation with external partners is possible only for branding the output of the data house. Although strategic collaboration with other stakeholders is certainly beneficial for strengthening the ecosystem and expanding the network, in this analysis, this is considered an added value that is not as important as more fundamental technical and operational components, such as data backup or system integration.

Overall, the main priority and opportunity to be seized within the data home system is ensuring data security and sustainability thru solid backups, while external collaboration, although important, is only considered a lower added value in this analysis.

Table 4. Threat Factor Matrix

No	Threats	Score
1	Security is poorly maintained, making it vulnerable to hacking and viruses.	1.04
2	Regulations are being stopped.	0.51
3	Digitalization of Supervision (E-Voting)	0.48
4	De decline in public trust	0.36
5	More Digital Orientation	0.35
6	If not treated, it will become a ticking time bomb.	0.15
7	Pressure not to develop a Rumah Data due to concerns that it would threaten the interests of election participants.	0.13
	Total	**3.01**

From the presented table 4, the factor with the highest score is the threat "Security is not well-maintained and vulnerable to hacking and viruses" with a score of 1.04. This indicates that security concerns are paramount because a poorly protected system can be an easy target for hackers and irresponsible individuals who could exploit the data held by Bawaslu, potentially damaging the data and the overall integrity of the system. On the other hand, the aspect with the lowest score is "Pressure not to develop a Rumah Data due to concerns that it would threaten the interests of election participants" with a score of 0.13. Although these concerns exist, they are considered a relatively small risk in this analysis compared to other issues.

Main priority in addressing this weakness is to strengthen the security system to protect data from cyberattacks, as security risks have the greatest impact if they occur. Meanwhile, other aspects, although

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important, can be additional considerations after the main security measures have been implemented. Toward Institutional Interests and Breaking Down Sectoral Ego, where each division tends to prioritize its own interests over the overall institutional interests. The Rumah Data plays an important role in dismantling this mentality by forcing all divisions to collaborate. When all surveillance data is centralized in the Data House, every leader and staff member can gain a more comprehensive overview of the election situation, transcending the boundaries of their respective divisions. *"Data transparency allows for early identification of potential violations and more informed decision-making,"* was the testimony from the heads of Bawaslu at the district/city level during the Rumah Data evaluation.

The Rumah Data also facilitates better communication and coordination between divisions. Thru this platform, each division can easily access data and information relevant to their tasks, as well as communicate and coordinate with other divisions to resolve issues or take necessary actions. This reduces the potential for duplication of work or conflicts of interest, and also improves the efficiency and effectiveness of Bawaslu's operations. Additionally, the Rumah Data also provides features to monitor and evaluate the performance of each division, allowing leaders to identify areas for improvement and provide appropriate support. Basis for Strategic Decision-Making, the presence of the Rumah Data is changing the way Bawaslu makes decisions. Previously, decisions were often based on fragmented and incomplete information. Now, with access to centralized and structured surveillance data, Bawaslu leaders can make more accurate and effective decisions. Data analysis from Rumah Data allows for the identification of trends and patterns that may not have been visible before, enabling institutions to take more targeted preventive or enforcement actions. *"focused on building digital capabilities to transform the organization and bringing strategic shift towards data driven decision making"*.(Turi, 2022) is the key to improving the effectiveness of decision-making in supervision.

Conclusion

The Rumah Data also provides a comprehensive statistical overview of the implementation of elections and voting in each region. This data can be used to monitor and evaluate the performance of election organizers, identify potential violations, and also inform future election monitoring policies and strategies. By analyzing data on the most frequent types of violations, Bawaslu can develop more effective prevention programs and improve the capacity of election supervisors in the field. Control of Supervision Stages, creating a check and balance environment for each stage of election supervision. By monitoring the data from each division, management can ensure that all stages of supervision are carried out according to the established plans and standards. This increases the accountability and operational efficiency of Bawaslu, identifying and addressing any issues or obstacles that may arise during the supervision process. By monitoring data in real-time, leaders can quickly identify any delayed or improperly executed oversight stages and take immediate corrective action. The long-term impact of this data center can build strong and reliable institutions. Implementing this innovation is not just about improving Bawaslu's operational efficiency, but also about building a stronger and more trustworthy institution. By promoting collaboration, transparency, and accountability, we help create a positive and productive organizational culture. When all Bawaslu leaders and staff work together effectively and share information openly, the institution will be better equipped to successfully carry out its duties and gain the trust of the public. "Public trust is the most valuable asset for election supervisory bodies," said chairman A. Warits.The Rumah Data also contributes to Bawaslu's capacity building in the long term. By providing a platform for data analysis and performance evaluation, Rumah Data helps this institution learn from experience and continuously improve the quality of election monitoring. Additionally, the Rumah Data also facilitates the transfer of knowledge and experience between divisions and across levels of Bawaslu, ensuring that best practices are widely disseminated and adopted. Thus, the Rumah Data is not only a short-term solution to address operational challenges, but also a long-term investment in building a strong, independent, and professional election supervisory body.

The analysis of the Cartesian diagram in this study comprehensively indicates that the current innovation of the East Java Bawaslu Rumah Data is in a promising quadrant and yields significant benefits. The implementation of an aggressive development strategy (Growth) has proven effective in driving sustainable innovation within the operations of Rumah Data.Nevertheless, it is crucial to note that the margin between positive and negative factors remains thin, indicating potential vulnerability. The S-W score of 0.97 indicates good internal strength and opportunity utilization, but the O-T score of 0.62 suggests internal-external challenges between weaknesses and threats that need to be addressed. A score difference of 0.35 reflects a fragile equilibrium between positive and negative influences. East Java Bawaslu is required

to take proactive and immediate steps to strengthen the positive factors in the development of the Data House. These efforts must focus on improving operational effectiveness, expanding innovation development, and enhancing the quality of the data produced. Without swift and measured intervention, negative factors have the potential to accelerate and erode the foundation of the Rumah Data innovation, which could ultimately hinder the achievement of the strategic goals that have been set. Strategies to consider include strengthening inter-divisional coordination, increasing human resource capacity, and optimizing the use of information technology to minimize potential risks and maximize the positive impact of the Rumah Data on election supervision in East Java.

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