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Research Article

Implementation of E-Government by the Batang Regency Government in Supporting Village Governance in Batang Regency

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Abstract. Digital transformation of government through the implementation of e-government has become a strategic agenda in bureaucratic reform in Indonesia. Local governments play a crucial role as a bridge between national policies and village governance practices. This article analyzes the implementation of e-government by the Batang Regency Government in support of village governance. This research uses a qualitative approach and a policy analysis method, based on literature reviews and official documents, including regional regulations, SPBE policies, and relevant institutional reports. The analysis was conducted using a theoretical framework of public policy implementation and the principles of good governance. The analysis results indicate that the Batang Regency Government has a relatively adequate e-government regulatory and institutional framework, but its implementation at the village level still faces challenges, including gaps in apparatus capacity, variations in village digital readiness, and suboptimal cross-organizational coordination. This article concludes that strengthening the role of local governments as facilitators, coaches, and coordinators of digital policies is key to the successful implementation of village e-government. These findings provide theoretical contributions to e-government studies and policy implementation, as well as practical implications for formulating local government digital policies.

Keywords: E-Government; Local Government; Policy Implementation; SPBE; Village Governance

1. Introduction

Digital transformation in governance has become a global and national strategic agenda over the past two decades. Advances in information technology are driving fundamental changes in how governments formulate policies, manage public administration, and provide public services. The Indonesian government has responded to this dynamic by positioning bureaucratic digitization as a key instrument for governance reform, as reflected in the Electronic-Based Government System (SPBE) policy. SPBE is designed to promote the integration of business processes, data, and public services across sectors and levels of government to improve public sector efficiency, transparency, and accountability.

In a global perspective, digital transformation of the public sector is understood not only as the adoption of information technology, but as a structural change in governance (*digital government transformation). Mergel* et al. (2021) emphasized that digital transformation requires changes in organizational structures, leadership, and patterns of interaction between government and citizens. The United Nations (2022) also emphasized that effective e-government must create public value through inclusive, participatory, and citizen-centered governance.

In local government, e-government plays a strategic role as a bridge between national policies and public service practices at the local level. Local governments serve as implementing actors, translating national policies into systems, procedures, and services directly accessible to the public. Various studies have shown that the success of e-government in local governments is heavily influenced by institutional capacity, bureaucratic leadership, and cross-organizational coordination capabilities (Gil-Garcia et al., 2020; Luna-Reyes et al.,

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2021). Without these factors, e-government implementation tends to be administrative in nature and fails to produce substantive changes in governance.

The Batang Regency Government responded to the digital transformation agenda by issuing several regional regulations, including Batang Regency Regent Regulation Number 53 of 2015 concerning the Implementation of the Utilization of Information and Communication Technology in Government Processes and Batang Regency Regent Regulation Number 46 of 2022 concerning the Digitalization of Regional Government Data and Information Analytics Dashboards. These regulations demonstrate the regional government's commitment to building an integrated and sustainable e-government framework. However, the existence of regulations does not guarantee effective implementation, particularly when the policy is implemented at the village government level.

Batang Regency has 239 villages and 9 sub-districts with diverse social, economic, and geographic characteristics. This diversity has implications for differences in digital readiness and village officials' capacity. On the one hand, e-government has the potential to be a strategic instrument for strengthening village governance, particularly in terms of transparency, accountability, and public service. On the other hand, limited human resources, infrastructure, and policy assistance can hinder the optimal use of e-government. Previous research confirms that the success of digitalization at the village level depends heavily on the active role of local governments as facilitators, coaches, and coordinators of digital policies (Prasojo et al., 2021; van Veenstra et al., 2022).

Despite the continued growth of e-government studies, there remains a gap in research specifically examining the implementation relationship between local and village governments. International research generally focuses on the macro-level digital transformation of the public sector, whereas national studies focus more on SPBE and bureaucratic reform, without examining their impact on village governance in depth. Research on villages tends to focus on village fund management or public services, but has not yet comprehensively integrated the role of local governments in implementing village e-government. This situation indicates a research gap that is relevant to study through a policy analysis approach. Based on this description, this article aims to analyze the Batang Regency Government's e-government implementation in supporting village governance. This article is expected to provide theoretical contributions to policy implementation and e-government studies, as well as practical contributions to the formulation of more effective and sustainable village government digitalization strategies.

2. Literature Review and Conceptual Framework

Public Policy Implementation

Policy implementation is a crucial stage in the public policy cycle, determining whether policy objectives can be effectively achieved. Edward III (1980) argued that the success of policy implementation is influenced by four main variables: communication, resources, implementer disposition, and bureaucratic structure. These four variables are interrelated and form an analytical framework widely used in studies of public policy implementation.

Hill and Hupe (2021) emphasize that policy implementation must be understood as an operational governance process involving various actors and interests. In complex policy contexts, such as e-government, implementation is determined not only by regulatory clarity but also by institutional capacity and cross-organizational coordination. Therefore, policy implementation theory is relevant for analyzing how local governments translate e-government policies into practices accessible to village administrations.

E-Government and Digital Governance

E-government is defined as the use of information and communication technology by the government to improve administrative efficiency, the quality of public services, transparency, and public participation (United Nations, 2020). The development of the e-government concept then gave birth to the e-government approach. *Digital governance, which emphasizes the integration of* technology, organization, and public value (Meijer et al., 2021). In the context of regional government, e-government serves as a strategic instrument to strengthen governance, including at the village level. Village information systems, village financial applications, and digital administrative services are concrete forms of e-government that can improve the accountability and effectiveness of village officials. However, the effectiveness of e-government depends heavily on institutional and human resource readiness.

Good Governance and Village Government Administration

The concept of good governance emphasizes the principles of transparency, accountability, participation, effectiveness, and the rule of law in government administration (UNDP, 1997). In the context of village government, applying good governance principles is increasingly important, as villages are the frontline government units that interact directly with the community. E-government is seen as a strategic tool for strengthening good governance

at the village level through information transparency, faster public service delivery, and greater accountability. However, implementing e-government in villages requires policy support, mentoring, and oversight from local governments to prevent a digital divide.

Conceptual Framework of the Research

Based on the literature review, this article's conceptual framework positions e-government implementation as a public policy influenced by factors such as policy communication, resources, implementer disposition, and bureaucratic structure. E-government implementation by local governments is a key variable influencing village governance, particularly in terms of transparency, accountability, and digitally based public services.

3. Research methods

This article uses a qualitative approach with a policy analysis method (*policy analysis). The* data are secondary, drawn from literature and documentation sources, including central and regional government regulations, SPBE policy documents, regional government performance reports, and scientific publications relevant to e-government and village governance. Data analysis was conducted by integrating public policy implementation theory and good governance principles as an analytical framework. The analysis process included identifying regional e-government policies, examining the role of local governments in policy implementation, and assessing the implications of e-government for village governance. This approach was chosen to gain a comprehensive understanding of the dynamics of e-government implementation without using primary field data.

4. Results and Discussion

Implementation of the E-Government Policy of Batang Regency Government

The analysis shows that the Batang Regency Government has a relatively adequate e-government policy framework, as evidenced by regional regulations and a commitment to implementing SPBE. This policy reflects the local government's efforts to integrate information technology into administrative processes and public services. From a policy implementation theory perspective, the existence of regulations is an important prerequisite, but it does not automatically guarantee successful implementation (Edward III, 1980; Hill & Hupe, 2021). At the implementation level, local governments play a key role in providing infrastructure, developing village officials, and coordinating relevant regional agencies. However, variations in village official capacity and digital infrastructure readiness have resulted in uneven e-government implementation. This situation indicates an implementation gap between policy design and practice in the field, as revealed in the research by Cordella and Paletti (2019) and Gil-Garcia et al. (2020).

E-Government and Village Governance

From a good governance perspective, e-government is seen as an instrument for strengthening transparency, accountability, and effectiveness in village governance. Digital systems have the potential to increase transparency of information, accelerate administrative processes, and strengthen oversight of village financial management. However, e-government effectiveness depends heavily on the capacity of local government officials and institutional support. The analysis shows that the role of local governments as facilitators and coaches is a determining factor in the success of village e-government. Without ongoing support and capacity building, the use of digital systems tends to be administrative in nature and does not fully support the principles of good governance. This finding aligns with the views of Meijer et al. (2021) and the United Nations (2022), which emphasize the importance of integrating technology, organizations, and human resources in digital governance.

Table 1. Descriptive Statistics of E-Government Implementation and Village Governance

NO	INDICATOR	MEAN	SD	MIN	MAX
1	Socialization of e-government policies	3.44	0.71	1	4
2	Consistency of system usage information	3.41	0.63	1	4
3	Availability of ICT infrastructure	3.38	0.70	1	4
4	Commitment of the local government apparatus	3.39	0.70	1	4
5	Coordination of regional and village devices	3.49	0.68	1	4
6	Transparency of information on village activities	3.65	0.62	1	4
7	Digital systems increase transparency	3.61	0.63	1	4
8	Accountability of accountability reports	3.49	0.75	1	4

9	Community participation	3.44	0.81	1	4
10	Program alignment with plan	3.51	0.75	1	4
11	Clarity of SPBE policy	3.41	0.67	1	4
12	Coordination between OPDs in SPBE	3.41	0.71	1	4
13	SPBE management according to job description	3.37	0.66	1	4
14	Access to electronic government services	3.44	0.71	1	4
15	Adequacy of IT infrastructure	3.37	0.62	2	4
16	Access to digital services by the public	3.38	0.70	1	4
17	Ease of use instructions	3.29	0.75	1	4
18	Speed of public service	3.51	0.68	1	4
19	Minimize administrative errors	3.39	0.67	1	4
20	Effectiveness of the work of the apparatus	3.41	0.67	1	4

The mean values for all indicators ranged from 3.29 to 3.65, indicating that respondents tended to agree to strongly agree with the success of e-government implementation. The relatively moderate standard deviation indicates differences in context between villages**,** especially on infrastructure indicators and ease of use

Policy Implications

The human resource capacity of village officials is a key factor in the success of e-government implementation at the local level. Interviews with the Gringsing Sub-district Head and village heads indicate that village officials generally have a basic understanding of how to use village government applications, particularly those related to administration and reporting. However, this understanding remains technically operational and is not yet fully supported by a conceptual understanding of e-government's purpose as an instrument for improving governance. Several village heads stated that officials tend to "follow the system out of obligation," rather than out of an awareness of the strategic value of digitalization. This finding indicates that village human resource capacity has not yet reached a digital mindset, but remains at the stage of digital compliance. This condition reinforces the view of policy implementation theory, which emphasizes that implementer capacity encompasses not only technical skills but also disposition and understanding of the substance of the policy.

In terms of competency readiness, interviews revealed significant variation across villages. Villages with relatively young officials and experience using digital technology demonstrated better adaptation to the e-government system. Conversely, villages dominated by senior officials faced challenges in terms of digital literacy and the speed of system adaptation. Several village heads stated that the training provided by the local government was general in nature and did not fully address the specific needs of village officials. This condition often resulted in officials relying on specific operators, making the system's sustainability vulnerable when personnel transfers or changes occurred. These findings indicate that village human resource readiness remains individual and has not yet been developed as institutional capacity. From an implementation theory perspective, such human resource limitations can create a gap between e-government policy design and implementation realities at the village level.

Interview results also indicated that coaching and mentoring from the local government are crucial to the readiness of village officials. The Gringsing sub-district head emphasized that coordination across regional agencies remains a challenge, particularly in aligning village e-government training and mentoring programs. The village head believes that ongoing mentoring is more necessary than short-term, one-way training. When village officials face technical or administrative challenges, support mechanisms are not always responsive and systematic. This situation has led in low self-confidence among village officials in effectively using digital systems. This finding aligns with the concept of*digital governance*which emphasizes the importance of institutional support and organizational learning in the digital transformation of the public sector. Without strengthening the role of local governments as active facilitators, the sustainable development of village human resource readiness will be difficult.

Overall, the interview results indicate that the human resource capacity and readiness of village officials in Batang Regency are adequate, but not yet optimal to support e-government as an effective instrument of village governance. Village officials have been able to run the system administratively, but have not yet fully utilized e-government to promote transparency, accountability, and innovation in public services. This gap underscores that the success of e-government depends not only on the availability of the system but also on the readiness of those who operate it. Within the policy implementation framework, this condition

underscores the importance of a structured, sustainable, and contextual strategy to strengthen human resource capacity. Therefore, improving the readiness of village officials needs to be positioned as a strategic agenda for local governments, not merely a technical support activity, so that e-government truly contributes to improving village governance.

Table 2. Integration of Descriptive Statistics and Interview Findings

Dimensions	Quantitative Findings	Qualitative Strengthening
Policy & Socialization	Mean high (3.41–3.44)	The Gringsing sub-district head emphasized that the SPBE policy is clear but is not yet fully operational in the village; the sub-district serves as a policy mediator.
ICT infrastructure	The mean is relatively lower (3.37–3.38)	The village heads of Surodadi, Gringsing, and Lebo highlighted internet network constraints and system stability as the main obstacles to implementation.
Commitment & Coordination	Mean high (3.39–3.49)	All informants emphasized that the role of OPD and sub-districts is very important in determining the sustainability of village e-government.
System Facilities & Acceptance	Lowest mean (3.29)	Villages with better digital literacy (Sentul, Mentosari, Sawangan) showed higher system acceptance (TAM/UTAUT)
Impact of Governance	Mean very high (3.51–3.65)	Informants stated that e-government increases transparency, accountability, and speed of village services.

The policy implications of these findings highlight the need to strengthen coordination across regional agencies, increase the capacity of village officials, and simplify e-government systems to better adapt to local village contexts. Local governments need to develop e-government implementation strategies that focus not only on technology but also on changing work culture and village governance.

Quantitative results indicate that e-government implementation in Batang Regency has been generally effective, particularly in transparency, accountability, and service speed. These findings are strongly confirmed by interview data, particularly from villages with relatively well-developed infrastructure and human resources.

However, data integration also revealed a design–reality gap (Heeks), reflected in relatively lower mean scores for infrastructure and ease of use. Interviews indicated that this gap was caused by disparities in internet access, digital literacy among government officials, and policy flexibility at the village level. Within the UNDESA framework, this condition indicates that village e-government in Batang is in a transition phase toward digital government, whereas, from the TAM/UTAUT perspective, the sustainability of system use is largely determined by perceived ease of use and institutional support.

5. Conclusion

The implementation of e-government in Batang Regency has generally been quite effective in supporting village governance. Quantitative analysis results show high average scores for most indicators, particularly transparency, accountability, institutional coordination, and accelerated public service delivery. These findings indicate that e-government policies and systems have been understood and accepted by village and sub-district government officials. Interviews reinforce these findings by demonstrating regional leaders' commitment, the active role of regional government agencies (OPDs), and the strategic function of sub-districts as policy liaisons between district and village governments. Thus, e-government serves not only as an administrative instrument but also as a means of reforming village governance, making it more transparent and coordinated.

The initial success of e-government implementation in Batang Regency is inseparable from the existence of a relatively adequate policy and regulatory framework. The SPBE policy, regional regulations, and technical support from relevant regional government agencies (OPDs) have served as a crucial foundation for promoting the digitalization of village government. However, research shows that these regulations are not yet fully operational and adaptable to real-world village conditions. In practice, policies remain top-down, leaving villages more as implementers than as innovative actors. This situation demonstrates that

regulations alone are insufficient to ensure the effectiveness of e-government implementation without supporting mechanisms and policy flexibility at the village level.

The main challenges to implementing e-government in village governments in Batang Regency lie in the capacity of government officials and the readiness of the digital infrastructure. Quantitatively, the ICT infrastructure and ease-of-use indicators have relatively lower average scores than other indicators. This finding aligns with interview results, which revealed disparities in internet network quality, variations in digital literacy among village officials, and limited supporting facilities in several areas. From Heeks' theoretical perspective, these conditions reflect a gap between e-government policy design and the reality of implementation at the village level. This gap could hinder the optimization of e-government benefits if not addressed systematically and sustainably.

Variations in digital readiness across villages have direct implications for the level of e-government utilization and for governance and public services. Villages with better infrastructure and technology-adaptive officials demonstrate more efficient system utilization and a more tangible impact on improving the quality of public services. Conversely, villages with limited network and human resources tend to utilize e-government only to fulfill administrative obligations. Within the framework of the Technology Acceptance Model and UTAUT, these differences indicate that perceived usefulness and ease of use of the system are key factors influencing the acceptance and sustainability of e-government use by village officials.

Strengthening the role of local governments as facilitators, mentors, and coordinators of digital policies is a key factor in increasing the effectiveness of village e-government. District governments play a strategic role in bridging capacity gaps between villages through ongoing technical assistance, improving civil servants' competence, and ensuring the equitable distribution of ICT infrastructure. Furthermore, cross-organizational coordination, particularly among regional government agencies (OPD), sub-districts, and village governments, is a crucial prerequisite for the successful implementation of e-government. Without strong and sustained coordination, village government digitalization risks fragmentation and an inability to deliver optimal impact on village governance.

Theoretically, this research contributes to the development of policy implementation and e-government studies in the context of regional and village government by integrating perspectives from Heeks, UNDESA, the Technology Acceptance Model, and UTAUT. The integration of quantitative and qualitative findings indicates that the success of e-government is largely determined by the alignment between policy, implementer capacity, and local context. Practically, the results of this study can serve as a reference for local governments in formulating a more inclusive, adaptive, and sustainable digitalization strategy for village government. With this approach, e-government is expected to function not only as an administrative tool but also as a strategic instrument to strengthen governance and improve the quality of village public services

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