

BUDGET EFFICIENCY AND DIGITALIZATION READINESS IN STRENGTHENING LOCAL GOVERNMENT HUMAN RESOURCES

Tirza Haqia Purnama^{1*}, Roni Ekha Putera^{2*}, Tengku Rika Valentina³

¹²*Department of Public Administration^{1,2}, Faculty of Social and Political Sciences, Andalas University*

³*Department of Political Science³, Faculty of Social and Political Sciences, Andalas University*

^{*}roniekbaputera@soc.unand.ac.id

Abstract:

Budget efficiency and accelerated digitalization are urgent demands for local governments. However, the low digital competence of human resources and bureaucratic resistance reveal the paradox between policy ambition and implementation reality. An efficiency approach without investment in human capacity has the potential to produce pseudo-digitalization that is only sophisticated on the surface but fragile in practice. Therefore, a long-term transformative strategy is needed that can strengthen the foundations of local governance in real terms. This research aims to examine how budget efficiency and digitization initiatives can be directed towards strengthening human resources within local governments. The main focus lies on how fiscal efficiency policies and the use of information technology can be aligned with the need to improve competencies, work culture, and supporting institutions. The method used is literature study and policy analysis by reviewing relevant official documents, regulations, and results of previous studies. The study was conducted thematically by identifying good practices and common obstacles in the implementation of digitization oriented towards strengthening human resources. The theoretical framework used includes the theory of organizational innovation adoption and the institutional capacity approach in public management. The results show that digitization based budget efficiency will only have a positive impact if followed by a structured apparatus capacity building strategy. Cultural resistance and lack of transformational leadership are the main obstacles. In contrast, local governments that make digitalization part of HR development are able to increase efficiency while encouraging sustainable organizational change. This research underscores the importance of alignment between fiscal efficiency policies, technological readiness, and investment in human capacity as the key to successful bureaucratic transformation in the digital era.

Keywords: Budget Efficiency, Local Government Digitalization, Human Resource Capacity Strengthening

INTRODUCTION

In recent years, local governments in Indonesia have been subject to increasing pressures to deliver budget efficiency and pursue digital transformation (Aminah &

Saksono, 2021). These imperatives emerge from national frameworks such as the Sistem Pemerintahan Berbasis Elektronik (SPBE), decentralization laws, and directives from the Ministry of Finance, yet their practical realization often suffers from a critical shortfall, insufficient attention to enhancing human resources (Maulana et al., 2024). Empirical studies show that while digital tools like the Regional Government Financial Information System (SIPD RI) can accelerate budget planning and improve transparency, the expected gains diminish when civil servants lack digital competencies or resist organizational change (Daud et al., 2025). This study contends that without deliberate investment in human capacity, digitalization initiatives risk becoming pseudo-digital veneer advanced on the surface but fragile in application.

Literature on e-government in Indonesia has extensively documented the dual challenge of infrastructural constraints and workforce unpreparedness. Sandra Willia Gusman's comprehensive review of SPBE highlights that although the Palapa Ring and national data integration represent critical infrastructure improvements, challenges remain in remote areas and among bureaucratic staff resistant to change (Willia Gusman, 2024). Similarly, Tarjo demonstrates that digital platforms at the local level can reduce corruption and enhance service delivery, but their effectiveness is significantly moderated by leadership commitment and staff skills (Tarjo et al., 2024). Patergiannaki et al. develop a four-stage model of local government digital transformation, noting that municipalities frequently stall at early stages due to human capacity weaknesses (Patergiannaki, 2023). These insights underscore a recurring theme, fiscal efficiency and e-government frameworks alone are insufficient without a parallel strategy to strengthen human resource capacity.

Despite this growing body of knowledge, few studies address the intersection of budget efficiency and digital readiness through the lens of capacity building. Prior research tends to treat budgetary rationalization and digitalization as separate domains. What sets this study apart is its focus on the synergies between efficient use of fiscal resources and the strategic readiness of human capital within local government institutions. By examining how digitalization initiatives, especially in budgeting can be leveraged to build competencies, foster digital culture, and embed transformational leadership, this research fills a critical gap (Schiuma et al., 2024). The novelty lies in positioning human capacity not merely as a supporting element, but as a central axis of sustainable bureaucratic transformation.

This paper has three main contributions. First, it systematically reviews national and regional policy documents, including SPBE performance audits and SIPD RI

implementation reports, to map the extent of human capacity integration in digitalization efforts. Second, it synthesizes findings from both international and Indonesian literature to trace patterns of success and failure in aligning budget efficiency with capacity development. Third, it proposes a conceptual framework that integrates Rogers's innovation adoption theory with institutional capacity constructs, thereby offering a cohesive model that explains under what conditions digital budget tools become catalysts for HR transformation.

By doing so, this study seeks to enrich academic discourse on public sector modernization and offer practical insights for policymakers. In defining capacity strengthening as a prerequisite for techno-fiscal reforms rather than a supplementary activity, this research advocates for integrated strategies that ensure digitalization initiatives are accompanied by consistent training, leadership development, and cultural change. In doing this, the study captures the state-of-the-art in Indonesian bureaucratic transformation and contributes to global debates on sustainable e-governance.

METHODOLOGY

This research adopts a qualitative-descriptive approach based entirely on literature and policy document analysis. The choice of this method aligns with the objective of understanding the dynamics between budget efficiency, digital readiness, and human resource development within local governments without the need for direct fieldwork or primary data collection. The approach allows for a comprehensive examination of secondary sources, including official government reports, academic publications, case studies, and regulatory documents issued by Indonesian ministries and oversight institutions.

The analytical process involved a thematic content analysis strategy. Documents and publications were categorized according to themes such as policy coherence, human capital development, technological adaptation, and efficiency outcomes. Particular attention was paid to case studies from regions that have demonstrated notable progress in digital governance, including Semarang and Banyuwangi, to highlight the role of human capacity in supporting or hindering these efforts. This methodology ensures that findings are grounded in a broad and multi-perspective view of the problem, enhancing validity through triangulation of sources.

RESULTS AND DISCUSSION

1. Digitalization and Budget Efficiency

Uneven Gains and Systemic Gaps The implementation of the Sistem Informasi Pembangunan Daerah (SIPD) has had a measurable impact on streamlining budget formulation processes in several local governments, particularly Jakarta. Reports from the Ministry of Finance in 2023 indicate that SIPD contributed to a 30% reduction in the time required for APBD preparation (Pesireron & Kriekhoff, 2025). This efficiency is achieved through the automation of data reconciliation, which reduces common errors in budget allocations for critical areas such as food security programs like Dana Ketahanan Pangan. However, these benefits are not universally felt. A stark urban-rural divide continues to hinder the broader impact of digitalization. In Jakarta, the availability of fiber-optic infrastructure allows real-time collaboration and rapid response (Awaludin et al., 2024). In contrast, South Sulawesi relies on limited 3G connectivity, resulting in delayed budget submissions that can take weeks (Asyraf & Tricahyono, 2024).

Moreover, the adoption of SIPD introduces hidden costs that challenge under-resourced regions. Licensing and maintenance fees, reported at Rp 1.2 billion per year, place a significant strain on the fiscal capacity of smaller districts (Bernika et al., 2023). These costs are especially burdensome in areas with limited revenue generation capabilities. In the context of food security, the absence of SIPD-integrated databases hampers the efficiency of agricultural subsidy distribution. According to the Ministry of Agriculture (2024), up to 60% of rural districts still lack digital registries for farmers, leading to inefficiencies and leakages (Sulfiana, 2025).

From a theoretical standpoint, Transaction Cost Economics (Williamson, 1981) offers insights into these disparities (Hennart & Verbeke, 2022). While digitalization reduces coordination costs in well-equipped environments, it simultaneously excludes underdeveloped regions, highlighting the need for infrastructure equalization as a prerequisite for inclusive digital transformation.

2. Human Resource Development

Training as a Catalyst for Institutional Change A standout case in effective digital transformation is Banyuwangi, where the local government has instituted the E-Budgeting Competency Matrix (Baidhowi, 2021). This tiered training program aligns civil servant skill levels with their functional use of SIPD. Technical upskilling initiatives have enabled approximately 80% of staff to use SIPD effectively for participatory budgeting, allowing

them to adapt budgetary allocations swiftly in response to food price volatility. Behavioral transformation is also evident, with simulation-based training reducing technophobia by 40%, according to data from Gartner (2023).

The impact of these efforts extends beyond internal capacity. Increased transparency through SIPD budget tracking has significantly raised public satisfaction, as measured by the KPK, from a score of 5.2 to 7.8 out of 10. Despite such successes, only 12% of Indonesian local governments currently mandate digital competency training, leading to over-reliance on external consultants and the erosion of internal administrative resilience (Ismail et al., 2023). This uneven investment undermines the sustainability of digital initiatives.

Table: Correlation between Training Intensity and SIPD Adoption

Region	Training Hours/Year	SIPD Utilization Rate (%)	Food Security Budget Accuracy (%)
Banyuwangi	120	92	88
National Average	35	48	52

Source: Ministry of Administrative Reform, 2024

3. Cultural Resistance and Leadership Deficit

The Achilles' Heel of Reform Cultural resistance remains one of the most persistent barriers to bureaucratic reform. In regions like East Nusa Tenggara, patronage systems remain entrenched, where the adoption of SIPD is seen as a threat to discretionary power over agricultural funds. Similarly, in Papua, over 60% of senior officials resist digital platforms, citing concerns over perceived loss of authority (Asemki et al., 2022). These behaviors are not just symptomatic of technological reluctance but reflect a deeper adherence to informal governance structures.

Leadership gaps exacerbate this resistance. Research by Kemendagri (2023) reveals that less than 10% of regional development plans (RPJMD) include digitalization goals, indicating a lack of strategic prioritization (Dinata et al., 2025). By contrast, Semarang's mayor has taken a proactive stance, linking staff promotions to SIPD proficiency, thereby driving a compliance rate of 75% among municipal employees (Rachmawati et al., 2023). The contrast in these outcomes aligns with the theory of Institutional Isomorphism (DiMaggio & Powell, 1983), where peripheral governments mimic Jakarta's digital models without tailoring them to local contexts, leading to superficial implementation (Zhao & Ge, 2023).

4. Policy Fragmentation

The Silo Effect in Digital Governance Fragmented digital governance further compounds inefficiencies. In West Java, the Smart Province initiative launched 14 separate digital platforms, most of which operated independently and failed to communicate with one another (MAULANA et al., 2024b). This resulted in the squandering of Rp 280 billion in technology investments without measurable impact. These disjointed efforts are especially damaging in critical areas such as food security (George & Adelaja, 2022). For example, the disconnect between the SIAP farmer database and SIPD budgeting modules caused rice subsidy delays in 2023, as reported by BULOG.

An effective solution to policy fragmentation is illustrated by Bali's One Data Policy, which integrates SIPD with datasets from agriculture, health, and education sectors (Bernot et al., 2024). This cross-sectoral approach enables more holistic planning and reduces redundancies. Additionally, linking budget performance indicators with human resource evaluations, as recommended by the OECD (2023), creates feedback loops that incentivize efficiency and accountability (Omoigberale et al., 2025).

5. Socio-Political Context

The Make or Break Factors The success or failure of digital transformation efforts is often dictated by the socio-political context (Kempeneer & Heylen, 2023). Semarang's establishment of a Digital Task Force, comprising stakeholders from academia, civil society, farmer cooperatives, and fintech firms, exemplifies how coalition-building can align digital tools with public needs. Likewise, Yogyakarta's decade-long leadership stability has facilitated the institutionalization of SIPD practices and ensured consistency in implementation.

Conversely, high turnover in regional leadership undermines continuity. In Maluku, for example, three gubernatorial changes over five years disrupted the momentum of e-budgeting programs, resulting in stalled progress and staff confusion. Cases of elite capture, such as in Riau, where local legislatures redirected SIPD allocations toward politically expedient projects, further highlight governance vulnerabilities .

To mitigate these risks, policy recommendations include mandating a minimum tenure of three years for digitalization project leaders to ensure continuity. Furthermore,

implementing village-level SIPD dashboards for food security budgets could enhance public oversight and curb misappropriation.

Theoretical Contribution This research bridges the Resource-Based View (Barney, 1991) and Public Value Theory (Moore, 1995) by asserting that intangible assets namely, human capital and political will are the true determinants of digital transformation success (Barney et al., 2021). These assets drive return on investment in digital tools and determine the extent to which technological solutions translate into tangible improvements in governance and public service delivery.

Revised Conclusion Digital transformation and budget efficiency must be reframed as strategic investments in human capital, not merely as technological upgrades (Judijanto, 2024). The proposed SIPD 2.0 framework emphasizes the following, first, conditional fiscal transfers should be tied to verifiable HR training expenditures to ensure capacity readiness. Second, multi-year political-administrative agreements are needed to guarantee implementation continuity. Third, agricultural and food security data should be embedded directly into the SIPD system to enhance sectoral integration.

Future research should aim to quantify the return on investment from HR training versus software procurement and compare governance models of digitalization across ASEAN countries. These steps will further refine Indonesia's approach to bureaucratic reform in the digital age.

CONCLUSION AND RECOMMENDATIONS

This research concludes that technology alone cannot ensure improved governance without strong investment in human capital. Digital budgeting systems like SIPD have significant potential, but only when deployed in conjunction with sustained training, leadership development, and institutional reform. The centrality of human resource capacity in digital transformation must be acknowledged and prioritized in both national and regional policymaking.

Recommendations include designing continuous training programs tailored to the digital competencies required in each administrative function; integrating digital strategies into broader reform frameworks; empowering local leaders to act as digital champions; and implementing region-specific support strategies. Monitoring tools should be developed to track progress and guide future initiatives based on measurable outcomes.

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