



Digital Transformation of Local Government Accounting: An Exploration of Technology Adoption in Bitung City Government Financial Reporting

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Article history	Submitted: 2026/09/24; Revised: 2026/09/29; Accepted: 2026/09/30
Abstract	Local governments in Indonesia are required to adopt the Regional Government Information System (SIPD), yet little is known about how it is used across organisational units. This qualitative case study of Bitung City Government integrates the Technology Acceptance Model and Institutional Theory, drawing on interviews with twelve informants from the Regional Finance and Asset Agency, the Health Office, and the Inspectorate, supplemented by passive observation. Adoption is layered: SIPD is integrated in budgeting and treasury administration but fragmented in accounting, asset management, and reporting, where companion applications, sectoral systems, and manual work fill the gaps. The central argument is that formal adoption is not the same as substantive use. Regulative pressure ensures formal use across all units in the core financial management modules, whereas perceived usefulness, ease of learning, and feature maturity help explain the depth of use and workarounds, and substantive competence contributes to the perceived accuracy of accounting data. Digital controls improve standardisation but do not by themselves improve substantive accounting quality. The study proposes a Layered Adoption Model with nine tentative propositions. The sustainability of mandatory adoption after coercive pressure is removed remains unresolved.
Keywords	Digital Transformation; Institutional Theory; Local Government Accounting; SIPD; Technology Acceptance Model
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INTRODUCTION

Digital transformation has become a strategic agenda for public sector governance reform to improve transparency, accountability, and the effectiveness of

regional financial management. Digital transformation is not merely a matter of replacing applications, but also requires changes in work processes, organisational structures, and personnel capacity (Mergel, Edelmann, & Haug, 2019), as well as changes in how accountability is exercised in public services (Agostino, Saliterer, & Steccolini, 2022). Law Number 23 of 2014 requires local governments to provide regional development information and regional financial information (Republic of Indonesia, 2014). In Indonesia, this agenda is realised through the Regional Government Information System (SIPD), mandated by Minister of Home Affairs Regulation Number 70 of 2019. SIPD integrates regional financial planning, budgeting, administration, and reporting into a single national platform (Ministry of Home Affairs of the Republic of Indonesia, 2019). Technical guidelines for regional financial management, including administration, accounting, and reporting, are further regulated in Minister of Home Affairs Regulation Number 77 of 2020 (Ministry of Home Affairs of the Republic of Indonesia, 2020).

Bitung City, as a centre of the fisheries industry and maritime logistics in North Sulawesi, provides a relevant context for examining this process. Banea, Haliah, Nirwana, Syamsuddin, and Kusumawati (2024) documented SIPD implementation at the Bitung City finance agency using Edward III's policy implementation framework. These studies concluded that implementation complied with regulations and was successful, with constraints involving internet connectivity and slow responses from the Ministry of Home Affairs. The study is important as an initial documentation, but it leaves three gaps. First, its scope was limited to one organisational unit. Second, a procedural compliance framework does not explain why personnel accept or reject technology, or how institutional environmental pressures shape adoption behaviour. Third, the study did not produce a theoretical model that could be tested.

A similar picture appears in SIPD studies in other regions, which generally use policy implementation frameworks and conclude that implementation is proceeding well with several constraints: delayed input in North Sumatra (Alfani & Nasution, 2022), human resource competence, unstable servers, and limited training in Ogan Komering Ulu (Tumija & Erlambang, 2023), as well as system errors and congestion in Banyumas (Aditiya & Kusuma, 2024). On the reporting side, Jiwandono (2024) found that asset reconciliation in Mojokerto City still uses SIMDA-BMD, while Fitriasari (2024) quantitatively demonstrated that SIPD implementation and human resource competence have a positive effect on the quality of financial reports. These studies provide rich descriptions of constraints, but have not yet explained the behavioural

and institutional mechanisms that cause personnel to accept, reject, or work around a mandated system.

From the individual perspective, technology acceptance is commonly explained by the Technology Acceptance Model (TAM). TAM states that acceptance is determined by perceived usefulness (PU), namely the belief that a system improves performance, and perceived ease of use (PEOU), namely the belief that a system can be used without excessive effort (Davis, 1989). However, applying TAM to a mandated system creates a particular issue because formal use is no longer a user choice. TAM2 positions voluntariness as a factor that changes the relationships among constructs (Venkatesh & Davis, 2000). Brown, Massey, Montoya-Weiss, and Burkman (2002) show that for mandated technologies, user perceptions still play a role, but their influence shifts toward attitudes and quality of use. Therefore, usage needs to be understood as a construct with depth (Burton-Jones & Straub, 2006). Post-adoption behaviour, including feature use, also needs to be distinguished from the initial decision to adopt (Jasperson, Carter, & Zmud, 2005), just as continued use is distinguished from initial acceptance (Bhattacharjee, 2001).

From the organisational perspective, Institutional Theory explains that organisations adopt new practices not solely because of technical efficiency, but also to obtain legitimacy. DiMaggio and Powell (1983) identify three mechanisms of isomorphism: coercive (regulatory and authority pressures), normative (professional norms), and mimetic (imitation of other organisations' practices under conditions of uncertainty). Scott (2014) formulates these as the regulative, normative, and cultural-cognitive pillars. Meyer and Rowan (1977) add that organisations can separate formal structures that are complied with for legitimacy from the core practices that are actually carried out, a phenomenon known as decoupling. Bromley and Powell (2012) then distinguish policy–practice decoupling, when a policy is adopted but not implemented, from means-ends decoupling, when a policy is formally implemented but does not achieve its substantive objectives. In e-government studies, Fountain (2001) distinguishes objective technology, namely the system as designed, from enacted technology, namely the system as interpreted and used by personnel in practice.

The two theories complement each other. TAM explains individual factors, whereas Institutional Theory explains structural factors. Integrating the two enables the study to answer questions that neither theory can answer separately: whether personnel use the system because they believe in its benefits, because of external pressure, or because of a combination of both. Studies of SIPD in Indonesia are still

dominated by implementation and compliance evaluations, so these questions have not been widely addressed. In addition to these two theories, this study provides room for constructs emerging from the data. Feature maturity relates to the system quality dimension in the information systems success model (DeLone & McLean, 2003) and to facilitating conditions in UTAUT (Venkatesh, Morris, Davis, & Davis, 2003). Substantive competence relates to the human resource competence literature, which has been shown to affect the quality of local government financial reports (Fitriasari, 2024).

Based on these gaps, this study aims to: (1) explore digital technology adoption practices in the financial reporting of Bitung City Government from the perspective of users across units; (2) understand the roles of perceived usefulness and perceived ease of use in SIPD adoption; (3) understand the role of institutional pressure in the adoption process; and (4) develop a conceptual adoption model based on the integration of the two theories. The central argument of this study is that, in the context of mandated technology, formal adoption is not the same as substantive use. Regulatory pressure ensures formal use of SIPD across all units in the core financial management modules, while perceived usefulness, ease of learning, and feature maturity help explain the depth of use and the emergence of workarounds. Personnel's substantive competence plays a role in determining whether such use produces accounting data perceived as accurate. This study contributes in three ways. Empirically, it brings together perspectives on administration, accounting, assets, regional apparatus organisations (OPDs), and internal oversight within the same object as previous studies. Theoretically, it offers a Layered Adoption Model that distinguishes formal use from substantive use in a mandatory context. Practically, it formulates policy recommendations for local and central governments.

METHOD

This study uses a qualitative approach with a case study design (Yin, 2018). This approach was selected to understand in depth how SIPD is accepted, used, and institutionalised in the context of Bitung City Government, including personnel experiences and perceptions that cannot be captured through quantitative data. The research locations include the Regional Finance and Asset Agency (BKAD), the Health Office as an OPD user with a high transaction volume, and the Regional Inspectorate. BKAD was established as the primary unit of analysis because it prepares the Local Government Financial Statements (LKPD), while the Health Office was selected as a critical case: with a high transaction volume and programme complexity, the technical constraints and system adaptations it experiences illustrate challenging conditions for

OPD users. To reduce social desirability bias in group interviews at BKAD, statements from BKAD informants were compared with statements from Inspectorate informants and field notes on the same themes. The single case of Bitung City Government was selected for two reasons. First, a previous study at the same location (Banea et al., 2024) provides a point of comparison, allowing observations to be expanded from one unit to multiple units within the same object. Second, at the time of the study, Bitung City was in the middle of the transition from SIMDA to SIPD, allowing the use of companion applications, sectoral systems, and their discontinuation to be observed as they occurred. The purpose of this case is to build theoretical propositions, not statistical generalisation (Yin, 2018).

The study began with a preliminary survey on 11 June 2026 that included passive observation of the contents of the SIPD application. This survey and the previous study (Banea et al., 2024) mapped the transition from SIMDA to SIPD, which did not occur simultaneously across fields, and this mapping became the basis for developing an interview guide based on nine themes integrating TAM and Institutional Theory. Data collection took place in stages from June to August 2026 and retrospectively covered the 2024–2026 transition period. Data were collected through semi-structured in-depth interviews on 18 June, 21 August, and 26 August 2026 with informants selected purposively based on their direct involvement in managing or using the regional financial system (Table 1). The 26 August interview was an additional interview with BKAD-1 concerning system use if it were not mandatory and with BKAD-7 concerning the choice of asset application; some of BKAD-7’s statements were recorded in writing. The researcher also passively observed how informants accessed SIPD and the available features, then recorded the observations in field notes and photographic documentation.

Table 1. Research Informants

Code	Role Group	Unit	Interview Format	Interview Date
BKAD-1	Functional financial analyst official	BKAD	Individual (preliminary survey); plus additional interview	11 June 2026; additional interview: 26 August 2026
INSP-1	Internal oversight leadership official	Inspectorate	Individual	18 June 2026

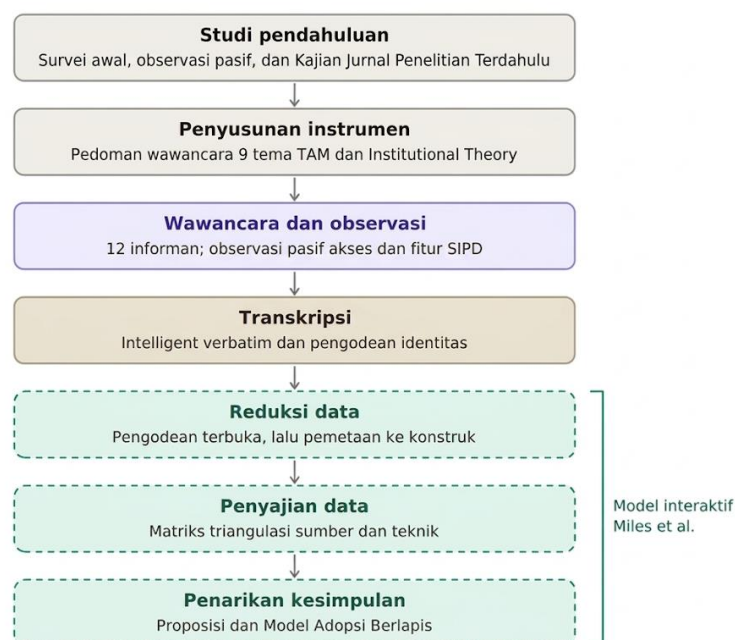
Code	Role Group	Unit	Interview Format	Interview Date
DNKS-1	OPD financial management official	Health Office	Individual	18 June 2026
BKAD-2, BKAD-3	Administrator official; staff	BKAD (Treasury)	Group	21 August 2026
BKAD-4, BKAD-5	Supervisory official; functional official	BKAD (Bookkeeping and Reporting)	Group	21 August 2026
BKAD-6, BKAD-7, BKAD-8	Administrator official; staff; functional official	BKAD (Assets)	Group; plus additional interview with BKAD-7	21 August 2026; BKAD-7: 26 August 2026
BKAD-9, BKAD-10	Administrator official; functional official	BKAD (Budgeting)	Group	21 August 2026

Source: Research data (2026)

Before the interviews, each informant was informed about the purpose of the study and gave consent to be recorded. Informants' identities were coded and their positions were presented as role groups to maintain confidentiality; information outside the recordings was used only as paraphrase. In group interviews, each speaker was identified through recordings and transcripts so that statements could be attributed to individual informant codes. Data sufficiency was assessed based on the recurrence of major themes, such as network disruptions, input-time workarounds, and companion applications, across the June, August, and additional 26 August 2026 interviews; sufficiency had not yet been reached for the theme of use without mandatory requirements, which was only asked of one informant in the additional interview, and for the OPD perspective. Because some informants were structural officials who might tend to present normative accounts, and group interviews could be dominated by field leaders, findings were compared across units before being formulated into propositions, and claims from a single party were treated as tentative findings.

During the interviews, some conversations were recorded and the remainder was documented in writing. The interviews were recorded with informants' consent, transcribed, and refined using an intelligent verbatim method. Local dialects were standardised without changing their meaning, and informants' identities were coded to maintain confidentiality. Data were analysed using the interactive model of Miles, Huberman, and Saldaña (2020) in three stages. In the reduction stage, each transcript was openly coded and the codes were mapped to TAM and Institutional Theory constructs. In the display stage, codes were compared across informants in a source-triangulation matrix. In the conclusion-drawing stage, consistent patterns were formulated into propositions. These propositions are emergent and tentative, namely an initial conceptual framework designed to be tested in further research, rather than a statistical generalisation. Data validity was maintained through source triangulation across units, technique triangulation between interviews and observations, comparison of preliminary survey findings with subsequent interviews, and an audit trail, namely the inclusion of informant codes and recording minutes for each quotation; data from written notes were presented only as paraphrases. The overall research framework is presented in Figure 1.

Figure 1. Research Framework



Source: Researcher data processing (2026)

RESULTS AND DISCUSSION

Adoption Practices: Integrated Upstream, Fragmented Downstream

The preliminary survey mapped an initial picture of the system transition: the shift from the SIMDA desktop application developed by BPKP to SIPD occurred gradually and not simultaneously across fields, with strong integration upstream in the cycle and fragmentation downstream (BKAD-1, 05:38). Findings from the subsequent interviews were consistent with this initial mapping. During the SIMDA era, the desktop application was centrally used at BKAD, and informants considered it mature because it had been developed over a long period (BKAD-4, 03:15). In 2024, SIMDA was abandoned and administration shifted to SIPD with the companion application SIPANDA. The BKAD reporting field discontinued SIPANDA in 2025, while the Treasury field only began using SIPD fully in 2026:

“We are now fully using SIPD... fully since 2026.” (BKAD-2, 02:29–03:00)

In June 2026, the Health Office was still using manual recapitulation and support from SIPANDA for certain details. At the same time, the Inspectorate began reviewing the RKPD directly within SIPD (INSP-1, 11:57).

Upstream in the financial cycle, SIPD practices demonstrate strong integration, with the BKAD Budgeting Division serving as the starting point for this integration. Unlike the downstream accounting and reporting modules, which remain fragmented, the planning and budgeting modules under the coordination of the Budgeting Division operate in an integrated and consistent manner. An informant from the Budgeting Division explained:

“The budget data input process practically requires only one entry upstream. Once entered, the data automatically flows to the administration stage through to reporting. Another important point is that at the budgeting stage, a role-based access system has already been implemented, so the share of input responsibilities is distributed proportionally down to the OPD level and sub-units such as health centres. This differs from the SIMDA era, when shared accounts were still frequently used. Now, whenever there is a change or budget proposal, its audit trail is clearly recorded based on the input account.” (BKAD-9, 10:38–12:10)

This information was confirmed from the OPD side. The Health Office informant stated that data only needs to be entered once, from budgeting through reporting (DNKS-1, B1 00:38; B2 01:43), and that input responsibility has now been delegated down to the budget user authority at health centres and assistant treasurers (B2 11:17).

Personal accounts have also replaced the “account lending” practice of the SIMDA era (B1 07:34). Account codes, programme names, and activity types are locked by the Ministry of Home Affairs in the budgeting module. According to the informants, this locking prevents classification errors and manipulation of expenditure items by OPDs, thereby strengthening internal control and reducing human error from the planning stage (BKAD-9, 13:10; INSP-1, 10:00). What the system locks is the list of valid codes, not the correctness of the choice among those codes; the following section shows that errors in selecting expenditure items still occur. In this field, planning and budgeting functions operate consistently without dependence on companion applications.

Passive observation of the interface and feature flow provided supporting evidence consistent with the informants’ statements. SIPD is accessed through a web browser, so every activity depends on an internet connection and the central server, consistent with informants’ complaints about network and system slowness. Users log in with personal accounts according to their roles, rather than shared accounts. Features for stages of the financial cycle, from budgeting and administration to accounting and reporting, are available on a single platform. This observation was limited to access methods and feature structure; the full process of transaction input through report preparation was not observed.

Downstream in the cycle, the system remains fragmented. The preliminary survey had already captured this: the accounting and reporting modules in SIPD were considered cumbersome and had not been fully implemented (BKAD-1, 10:02). Accrual treatment was incomplete: “Last year, capital expenditure at the time of the advance payment immediately became an asset” (BKAD-4, 05:30). Reports by funding source and contract reports were not yet available at the OPD level (DNKS-1, B2 15:06–15:24). Specific asset account codes were also unavailable in SIPD (DNKS-1, B2 16:44), because the details were stored in IBMD. Assets were managed in the IBMD application and synchronised with SIPD through a template. This process had been described as “very bad” in the previous year (BKAD-4, 13:36) and, as stated by the Asset Division informant, coincided with the migration process from SIMDA BMD to IBMD (BKAD-6, 03:01–04:05).

Applications outside SIPD turned out to consist of two types. The first type was a temporary companion application (SIPANDA), used because of limited initial understanding of e-SIPD (DNKS-1, B2 00:29). In 2024, the BKAD Reporting Division temporarily used SIPANDA to ensure the smooth preparation of the Local Government Financial Statements (LKPD), before finally discontinuing it completely in 2025 (BKAD-5, 06:35). The second type was a legitimate sectoral system, such as

IBMD for the management of regional property (BMD). IBMD remains in use because regulations concerning BMD regulate only the output format, not the application used (BKAD-8, 02:45).

Dependence on the network and central server, which is slow during working hours, along with the pattern of entering data at dawn or around midnight, had already been identified in the preliminary survey (BKAD-1, 12:08). Server, network, and system congestion constraints were also reported in Ogan Komering Ulu Regency and Banyumas Regency (Tumija & Erlambang, 2023; Aditiya & Kusuma, 2024), suggesting that these technical constraints may be related to the characteristics of a centralised system architecture, as also indicated by previous studies, rather than being solely a local condition of Bitung City.

These findings qualify the picture presented by Banea et al. (2024) that SIPD implementation was successful without other applications. From a cross-functional perspective, formal compliance is seen to coexist with companion applications, sectoral systems, and manual work, consistent with the view that post-adoption behaviour needs to be distinguished from the adoption decision (Jasperson et al., 2005). This pattern is referred to in this study as layered adoption. The pattern is not an isolated case: asset reconciliation in Mojokerto City still uses SIMDA-BMD (Jiwandono, 2024), and in Ogan Komering Ulu, SIMDA was temporarily used as a support system before SIPD was fully implemented (Tumija & Erlambang, 2023).

Perceived Usefulness and Perceived Ease of Use

Table 2 summarises the findings for each TAM construct.

Table 2. Matrix of TAM Construct Findings

Construct	Dimension	Finding	Source
PU	Control function	High: prevents human error, locks nomenclature, one-time input, input trail, tiered review within the application	INSP-1; DNKS-1; BKAD-9; BKAD-10
PU	Information function	Low: accrual is incomplete; funding-source and contract reports are unavailable; asset account codes are unavailable; asset synchronisation uses a template	BKAD-1; BKAD-3; BKAD-4; DNKS-1

Construct	Dimension	Finding	Source
PU	Comparison with old system	SIMDA is considered more complete because it is integrated with assets; SIPD continues to be used because it is mandatory	BKAD-7 (written notes)
PU and PEOU	Non-mandatory system (IBMD)	Functional fit of the system (format meets needs, faster reporting) is the main consideration, although PEOU is low (“rather complicated”) and licensing costs are a difficulty	BKAD-7
PEOU	Interface	Relatively clear	BKAD-3
PEOU	Learning	Low: training was provided only once, the transition was sudden, learning came from modules and YouTube; improved through use	BKAD-2; BKAD-4; BKAD-5; BKAD-6
PEOU	System performance	Low: slow during peak hours, maintenance, account blocking; input shifted to dawn or midnight	BKAD-1; BKAD-2; BKAD-5; DNKS-1
PEOU	Benchmark	Assessed comparatively against SIMDA and SIMDA BMD	BKAD-4; BKAD-7
Attitude	–	Resistance, followed by normalisation, then pragmatic acceptance; in the Asset Division, acceptance occurred because of the obligation	BKAD-3; BKAD-7
Intention without obligation	System preference	Hypothetical, one informant: return to the old system (SIMDA) because it is familiar and its features are complete from planning through reporting	BKAD-1

Construct	Dimension	Finding	Source
Use	Depth	Different across units: full in the Treasury Division and Inspectorate; Health Office with manual recapitulation and SIPANDA; assets in IBMD	BKAD-2; INSP-1; DNKS-1; BKAD-6; BKAD-8

Source: Researcher data processing (2026)

PU is divided according to system function. For the control function, the Inspectorate informant considered reporting quality to be “indeed benefited... preventing errors that are human error or attempts to manipulate expenditure items by OPDs can be reduced” (INSP-1, 10:00). For the information function, report preparers assessed it differently: “Until now, SIPD is still very cumbersome in accounting, in reporting” (BKAD-3, 13:41). The control benefits are most strongly felt by oversight personnel, while the information burden is most strongly felt by report preparers. In the context studied, SIPD is perceived as stronger in its control function than in its accounting and reporting information function.

PEOU has three dimensions with different directions. The interface is considered sufficiently clear. However, ease of learning is low because formal training was provided only once, in 2024 (BKAD-2, 04:06), and the transition felt sudden: “Suddenly, ‘this is the application,’ at most we were given instructions through a book or module” (BKAD-5, 15:46). System performance also declines during peak hours. Ease is assessed comparatively against SIMDA as a benchmark, and understanding grows through use: “The more we use it, the more organised it becomes, and the more we know” (BKAD-6, 04:39).

User attitudes shifted from resistance (“Why do we have to do it again?”; BKAD-3, 11:33), to normalisation (“It is normal when it is new”; BKAD-3, 11:25), and then to pragmatic acceptance. The Inspectorate informant identified the Ministry of Home Affairs policy as the main reason for using SIPD (INSP-1, 17:05), but also mentioned concrete benefits, namely the prevention of human error (10:00) and more orderly reviews because review records are stored within the application (11:57). In the Asset Division, acceptance occurred even though the new system’s PU was considered lower: SIMDA was previously considered more complete because it was already integrated with assets, but because SIPD is a Ministry of Home Affairs project, the work unit still had to adapt (BKAD-7, written notes). The question of using SIPD if it were not mandatory was only asked of one informant, namely BKAD-1, in the

additional interview on 26 August 2026. The answer instead pointed toward returning to the old system:

“If it were not mandatory, then we would continue using the old system from BPKP... because it is already familiar and the system has many features that are very necessary, from planning, administration, to reporting.” (BKAD-1, additional interview, 02:10)

This answer is consistent with the Asset Division’s note that SIMDA was previously more complete (BKAD-7, written notes) and with inertia toward systems already mastered by users (Polites & Karahanna, 2012). Both indicate that, at least for some users, formal SIPD use is sustained by obligation rather than preference. Because this comes from one informant and is hypothetical, the answer is treated as an initial indication, not a conclusion. What can be observed more broadly is the depth of use, which differs across units (Table 2).

The difference in depth cannot be explained by a single factor. The units that most strongly experience control benefits, namely the Inspectorate and Treasury Division, use SIPD substantively, and the Inspectorate even began reviews within SIPD before the transition period ended (INSP-1, 11:57). However, depth also follows feature maturity and ease of learning: the Health Office performs manual recapitulation mainly because reports by funding source and contracts cannot yet be generated by SIPD (DNKS-1, B2 15:06–15:24), and at the beginning of the transition it used SIPANDA because “at that time we did not yet understand e-SIPD” (B2 00:29). Because PU for the information function and feature maturity move together, the data cannot yet separate the two. The continuation of SIPD use if coercive pressure is removed therefore cannot yet be concluded; the asset case below also cannot answer this because the asset subsystem has never been required to use SIPD.

The Asset Division provides a contrasting case regarding the target of regulation. IBMD is not mandatory, is expensive, causing many regions to postpone it (BKAD-7, 02:23), and is considered “rather complicated because there are many steps” (05:16), but Bitung City chose it because its output was “more suitable for our needs” (01:13) and it was prepared in accordance with Minister of Home Affairs Regulation Number 47 of 2021 (BKAD-7, additional interview, 01:16). The SIPD-BMD module is actually available, but has not been used because it is not yet mandatory and its implementation in other regions is not yet widespread: “Assets have not moved to SIPD and there is indeed SIPD BMD for assets... Many are still using SIMDA assets instead” (02:19). As long as the asset subsystem is not mandatory, application choice is determined by its fit with technical requirements (Ministry of Home Affairs of the

Republic of Indonesia, 2021) and by inertia toward the existing system (Polites & Karahanna, 2012), rather than by obligation.

Digital controls also need to be distinguished from substantive competence. SIPD increases standardisation: accounts are personal, and account codes and programme nomenclature are locked centrally. However, the Inspectorate informant found operators who were able to run the application but entered the wrong expenditure item, meaning that understanding of the rules remains necessary, “not merely knowing how to operate the application” (INSP-1, 05:50). The system can restrict choices to valid codes, but cannot ensure that the selected code corresponds to the substance of the transaction. Digital standardisation therefore does not automatically improve substantive accounting quality; digital control is not the same as substantive competence. This finding is consistent with Fitriasaki (2024), which shows that human resource competence has a positive effect on the quality of local government financial reports, and explains why oversight remains necessary at points not prevented by the application.

In the IBMD case, the functional fit of the system is prioritised over ease of use and cost, consistent with Davis (1989). In the public sector context, which has a strict regulatory obligation structure (mandatory setting), PEOU and PU from TAM do not function as the sole determinants of the adoption decision, but instead act as mediators that differentiate the depth of adoption. Meanwhile, the emergence of ceremonial adoption patterns is mainly related to system functionality that is not yet adequate to accommodate local operational complexity, as emphasised in Proposition 7 (P7). This finding supports Brown et al. (2002): obligation does not eliminate the role of perceptions, but shifts their role from determining whether a system is used to helping explain how deeply it is used (Burton-Jones & Straub, 2006). In Fountain’s (2001) framework, SIPD as designed by the Ministry of Home Affairs constitutes objective technology, whereas the ways personnel interpret, operate, and supplement it constitute enacted technology. The contribution of this study is to reveal the mechanisms shaping the gap between the two, namely PU divided according to function and user position, feature maturity, ease of learning, and substantive competence.

Institutional Pressure

Table 3 maps the forms of institutional pressure and their impacts on adoption.

Table 3. Matrix of Institutional Pressure

Type of Pressure	Form	Impact on Adoption	Source
Regulative over the tool	SIPD obligation; nomenclature locked; account recovery and resource persons centralised	Formal and full use; initial resistance; earlier adaptation	INSP-1; DNKS-1; BKAD-9
Regulative over outputs	BMD regulation governs format, not application	Uniformity of reports accompanied by diversity of systems	BKAD-8
Normative	During the SIMDA era, updates and learning were facilitated by BPKP as the technical supervisory institution; during the SIPD era, this professional support channel was no longer experienced in the same way	Professional learning pathway weakened; users shifted to YouTube and user networks	BKAD-2; BKAD-4; INSP-1
Mimetic (potential)	No benchmarking visits; cross-regional user groups	Horizontal learning	BKAD-2; BKAD-4; BKAD-7

Source: Researcher data processing (2026)

Note: The Ministry of Home Affairs is positioned under the regulative pillar because it acts as the regulator, including as the sole training resource provider. Resource capacity (human resources, infrastructure, and budget), including sectoral application licensing costs that cause IBMD adoption to be non-simultaneous across regions (BKAD-7), is not included as institutional pressure, but as an internal supporting condition.

Regulatory pressure is the most dominant driver: “Ultimately, the Ministry of Home Affairs, with its regulations, made a policy to use SIPD” (INSP-1, 18:06). Central control reaches daily operations, including training: “Now only people from the

Ministry of Home Affairs can be resource persons” (DNKS-1, B2 07:44). The Asset Division informant described this pressure as an adjustment that had to be accepted even though the old system was considered more complete (BKAD-7, written notes). This statement shows that obligation can override perceived usefulness, while also explaining one source of downstream fragmentation: the integration between financial and asset management that previously existed in SIMDA was disrupted when financial management moved to SIPD, while assets were managed in IBMD. This pressure has two sides. On the one hand, regulatory pressure ensures formal use and expands its scope, even generating earlier adaptation in the Inspectorate. On the other hand, the same pressure triggers initial resistance and does not by itself increase PU.

Regulatory pressure can also target two different objects. Financial management regulations mandate the tool, namely SIPD, whereas BMD regulations only mandate the output format. As long as SIPD-BMD regulation does not yet exist, assets continue to be managed in IBMD (BKAD-8, 06:15). This regulatory pluralism produces system fragmentation that cannot be resolved by technology alone.

When regulatory obligation is not accompanied by adequate system functionality, organisations tend to implement a decoupling strategy (Meyer & Rowan, 1977). In 2024, BKAD complied with the obligation to use SIPD, but continued to rely on the companion application SIPANDA to prepare LKPD (BKAD-5, 06:35). This separation of formal structure and operational practice was temporary (temporary buffering). The use of the companion application was gradually discontinued in 2025 not because of the emergence of abstract trust in the new system, but because the operational demands of financial report preparation could gradually be met by SIPD (BKAD-5, 06:35).

Informants perceived that the normative support previously received from BPKP as a supervisory institution was no longer experienced in the same way during the SIPD period. Learning is now centralised in the Ministry of Home Affairs, which acts as the regulator, so the learning channel shifted from the normative pillar to the regulative pillar. During the SIMDA era, BPKP involved the regions before releasing updates (BKAD-4, 16:41). During the SIPD era, users stated that they “just search on YouTube” (BKAD-4, 17:11). None of the informants mentioned BPK as a source of pressure. Formal mimetic pressure, such as benchmarking visits, was also not found. Instead, cross-regional user groups became a learning channel and a source of information about choices made by other regions (BKAD-7, 06:23–06:25), although Bitung City’s own decision did not appear to be an imitation.

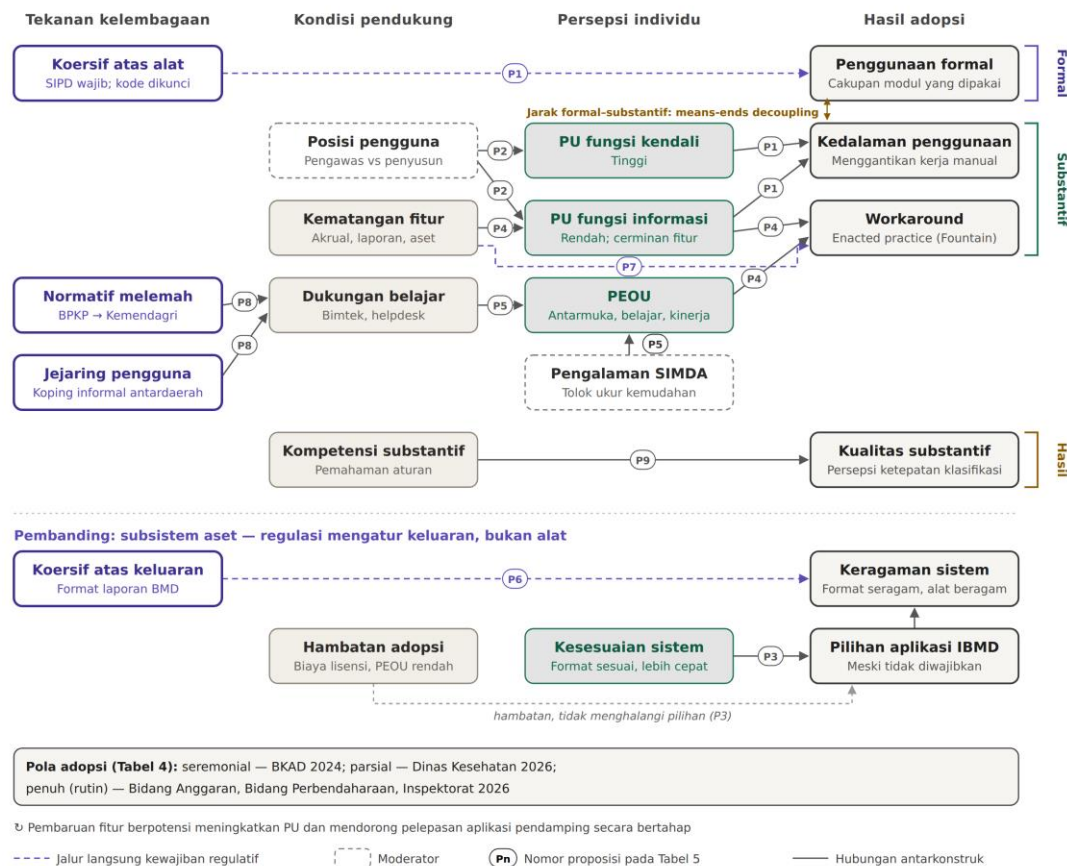
These findings reinforce the dominance of coercive isomorphism (DiMaggio & Powell, 1983), while adding three nuances. First, isomorphism can occur in outputs without occurring in the tool, so the target of regulation determines the form of uniformity produced by the regulative pillar (Scott, 2014). Second, decoupling (Meyer & Rowan, 1977) can be temporal as a safeguarding strategy during a transition period. Third, when formal norm carriers weaken, digital networks among users take over the learning function.

Within the framework of Bromley and Powell (2012), this pattern can be read as a shift in the form of decoupling. In 2024, BKAD demonstrated temporary policy–practice decoupling: the SIPD obligation was formally fulfilled, but LKPD was prepared through SIPANDA. In 2026, the policy had been implemented in most of the units studied, although the Health Office still used SIPANDA for certain details, but the gap between formal compliance and substantive objectives had not been closed: reports by funding source and contract reports were still prepared outside SIPD, assets were managed in IBMD, and classification accuracy still depended on operator competence. The latter pattern is closer to means-ends decoupling, namely a policy is implemented compliantly but has not fully achieved its basic objective, namely complete and accurate accounting information. From the perspective of technology enactment (Fountain, 2001), the way SIPD is implemented is shaped by the surrounding institutional arrangements: training centralised in the Ministry of Home Affairs, asset regulations that govern only outputs, and centrally determined features encourage personnel to create local adaptations, such as manual recapitulation and companion applications, to maintain operational continuity.

Layered Adoption Model

Based on the findings above, this study proposes a Layered Adoption Model (Figure 2). The core of the model is the distinction between formal use and substantive use. Coercive pressure acts directly on formal use: when it targets the tool, this pressure ensures that the system is formally used; when it targets only outputs, as in the asset subsystem, this pressure produces uniformity of reports accompanied by diversity of systems. Substantive use is explained through another pathway. Institutional pressure operates through supporting conditions, namely feature maturity, learning support, and substantive competence. Supporting conditions shape individual perceptions, namely PU divided according to function and user position, as well as PEOU. Experience with SIMDA acts as a benchmark that moderates PEOU. Each arrow in Figure 2 refers to a proposition in Table 5.

Figure 2. Layered Adoption Model of Digital Technology in Local Government Accounting



Source: Researcher data processing (2026)

Because formal use is already ensured by regulation, adoption outcomes are not formulated as a decision to use or not use. This model distinguishes behavioural dimensions from outcome dimensions. The behavioural dimension consists of two aspects. First, formal use, namely the scope of SIPD modules and functions used, which is directly driven by coercive pressure. Second, substantive use, namely the extent to which SIPD features actually replace companion applications and manual records in daily operations, which is explained by PU, ease of learning, and feature maturity. The outcome dimension is substantive quality, namely the accuracy of expenditure-item classification, accuracy, and reliability of the financial information produced, which is influenced, among other factors, by users' substantive competence. In this study, substantive quality is observed as perceived transactional accuracy and procedural compliance according to implementers and supervisors, rather than as the result of a substantive audit test of financial statements. With this distinction, a unit that uses SIPD deeply but selects the wrong expenditure item is classified as having

high substantive use but low substantive quality. Table 4 maps combinations of formal use and substantive use into adoption patterns.

Table 4. Typology of SIPD Adoption Patterns

Formal use \ Substantive use	Low SIPD supplemented by companion applications, manual recapitulation, or other systems	High SIPD replaces companion applications and manual work
High SIPD used as required	Cell 1: Ceremonial adoption and partial adoption Criteria: SIPD is used to fulfil the obligation, but core work (ceremonial) or some details (partial) still depend on other applications or manual work. Units: BKAD Reporting Division 2024 (ceremonial); Health Office 2026 (partial).	Cell 2: Full adoption (routine) Criteria: SIPD is used consistently without companion applications. Units: Budgeting Division, Treasury Division, and Inspectorate 2026.
Low Obligation not fulfilled or not applicable	Cell 3: Non-adoption Criteria: SIPD is not used and the unit remains with another system. Units: none found for mandated functions. The asset subsystem does not use SIPD- BMD because it is not yet mandatory, not because it rejects the obligation.	Cell 4: Substantive use without obligation Criteria: SIPD is used deeply without an obligation. Unit: cannot be observed because all functions studied are subject to mandatory requirements. One hypothetical response (BKAD- 1) instead points toward returning to the old system, so the existence of this cell remains an open question.

Source: Researcher data processing (2026)

Note: The routine label in Cell 2 is based on consistent use without companion applications according to the units' own statements. Routine use does not necessarily mean internalisation, because one informant stated that they would return to the old system if it were not mandatory (BKAD-1, additional interview, 02:10). Units within one cell are also not fully comparable because the SIPD functions and observation periods differ across units.

In the main financial management modules, all units are in the high formal-use row, so the observed variation occurs in the substantive dimension; the asset subsystem continues to use IBMD because SIPD-BMD is not yet mandatory. Cell 4 is included to mark an unanswered question; one initial indication (BKAD-1, additional interview, 02:10) instead points toward Cell 3.

The Budgeting Division most clearly demonstrates the full adoption pattern (Cell 2): central locking of nomenclature ensures formal use, while audit trails and code standardisation make the budgeting module used consistently without companion applications (BKAD-10, 11:20). This upstream integration is a prerequisite, but not a guarantee, for substantive downstream use, which remains fragmented. Central feature updates have the potential to create a feedback loop that increases PU; the discontinuation of companion applications did occur gradually (BKAD-2, 02:29–03:00), but its relationship with feature updates has not been tested. This model is formulated in nine tentative propositions (Table 5).

Table 5. Tentative Propositions of the Layered Adoption Model

No.	Proposition
P1	In the context of mandatory technology, formal adoption is not the same as substantive use: coercive pressure ensures formal use and determines the system used, whereas PU, ease of learning, and feature maturity are associated with depth of use and the emergence of workarounds.
P2	PU is divided according to user position: supervisors and administrators experience the benefits of the control function, whereas report preparers bear the burden of the information function, resulting in different depths of use across roles.
P3	In subsystems that are not directly required to use SIPD, system fit with technical needs appears to be an important consideration in maintaining an alternative system, even though ease of use and cost are obstacles.

No.	Proposition
P4	Low PU of the information function and low system performance encourage workarounds and partial adoption.
P5	Ease of learning is determined by institutional support and usage experience, not by interface design.
P6	Regulations that govern only outputs produce uniformity of reports accompanied by diversity of systems; full integration requires regulations that also govern the tool.
P7	Under coercive pressure, when system functionality is inadequate because features are immature or incomplete, organisations implement temporary decoupling, such as the use of companion applications, until the functionality of the new system is considered ready; adequate functionality ends decoupling, but does not necessarily change users' preferences for the old system.
P8	Weak technical support from formal norm carriers encourages informal coping mechanisms in the form of peer support among practitioners through user groups, which may develop into mimetic isomorphism if work procedures are imitated across local governments.
P9	Digital controls increase standardisation, but the ability to operate an application does not by itself guarantee input quality; users' substantive understanding of regulations and transaction classification plays an important role in the accuracy of data perceived by implementers and supervisors.

Source: Researcher data processing (2026)

Policy Implications

The findings point to one principle: regulatory obligation plays an important role in ensuring SIPD use; however, the effectiveness of that obligation depends on feature maturity, learning support, and users' substantive competence. For local governments, the implications include four steps:

- a) role-based internal training that combines application skills with an understanding of regulations, using functional financial analyst officials as internal trainers, as well as refresher training whenever menus are updated, as implemented in Mojokerto City (Jiwandono, 2024);
- b) establishing a local SIPD clinic with a knowledge base documenting solutions from user groups;

- c) preparing monthly asset reconciliation SOPs and a roadmap for the transition from IBMD to SIPD-BMD;
- d) monitoring substantive use through measurable indicators, such as the proportion of reports produced directly from SIPD, the number of workarounds, and findings of classification errors, rather than formal compliance alone.

For the Inspectorate, risk-based oversight needs to be directed toward points not prevented by the application, such as the accuracy of expenditure and asset classification, because digital controls do not replace substantive competence. For the Ministry of Home Affairs, priorities are to complete accrual and reporting features, issue SIPD-BMD regulations together with interoperability standards, and decentralise knowledge through regional training and tiered help services.

CONCLUSION

This study shows that, in the context of mandated technology, formal adoption is not the same as substantive use. SIPD adoption in Bitung City occurs in layers: budgeting and administrative functions are used routinely, whereas accounting, asset, and reporting functions are still supported by other systems and manual work. Regulatory pressure ensures formal use across all units in the core financial management modules, even when the old system is considered more complete. Depth of use and workarounds are explained by PU, ease of learning, and feature maturity, while substantive competence plays a role in perceived data accuracy. SIPD increases standardisation, but does not automatically improve substantive accounting quality, because operators can still select the wrong expenditure item among locked codes. The regulatory target, whether the tool or the output, also determines whether system integration occurs. The main contribution of this study is the Layered Adoption Model together with nine tentative propositions. The continuation of mandatory technology adoption after coercive pressure is removed remains empirically unanswered; one informant who was asked provided an initial indication toward returning to the old system.

This study has several limitations that should be considered when interpreting the findings. First, in terms of unit coverage, the perspectives of OPD users and internal oversight in this single case study are each represented by one work unit (the Health Office and Regional Inspectorate). In addition, some interviews were conducted in groups with incomplete recordings, and observations were limited to the structure of the interface and the SIPD feature access flow. Detailed analysis of external documents, such as Audit Reports (LHP) from the Audit Board of Indonesia (BPK),

has also not yet been integrated, so substantive accounting quality was explored through perceptions and confirmation of informants' practices rather than direct measurement of financial documents. This study focuses on user perceptions and adoption behaviour, not substantive accounting audit tests of financial statement items. The question of SIPD use if it were not mandatory was also asked of only one informant in an additional interview, so the continuation of adoption after coercive pressure is removed cannot yet be concluded.

It is important to emphasise that the limitation in unit coverage is a logical consequence of the exploratory case study design. This study was not designed to make statistical generalisations, but to build the Layered Adoption Model as a tentative conceptual framework and formulate nine emergent theoretical propositions (Yin, 2018). Thus, the limited number of OPDs is not a methodological failure, but an intentional delineation of scope to provide room for further studies.

Based on this theoretical position, future research is recommended to: (1) expand empirical testing to various OPD characteristics, such as OPDs with technical infrastructure functions or purely administrative authority; (2) conduct financial document and audit analysis to directly measure substantive accounting quality; (3) examine the continuation of SIPD use when coercive pressure weakens or is removed; and (4) test and validate the Layered Adoption Model and its propositions quantitatively through multi-case surveys on a broader sample of local governments.

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