

Digital Transformation of Regional Property Management: e-BMD Implementation and Its Implications for Substantive Accountability

**Indra Jaya Sabir^{1*)}, Frida Chairunisa²⁾, Andi Rasdiyanti³⁾, Muh. Syarif Ahmad⁴⁾,
Wahyu Nurdiansyah N⁵⁾**

^{1,2,3,4,5)} Study Program of State Development Administration, Politeknik STIA LAN Makassar, Indonesia

*Corresponding Author

Email: indrajayasabir@gmail.com

fchairunisa@yahoo.com, a.rasdiyanti@stialanmakassar.ac.id, syariff.ahamd@gmail.com,

wahyu.nurdiansyah28@gmail.com

Abstract

The management of Regional Property (Barang Milik Daerah, BMD) requires accurate and integrated data to ensure public accountability. The transition from the desktop-based SIMDA-BMD to the web-based Electronic Information System for Regional Property (e-BMD) aims to strengthen digital asset governance. This study analyzes the implementation of e-BMD at the General Bureau of the Regional Secretariat of West Sulawesi Province and its contribution to asset management accountability. Using a qualitative explanatory case study, data were collected through in-depth interviews with nine key informants, direct observation, and documentation, and validated through source and method triangulation. The analysis draws on the DeLone and McLean (2003) Information Systems Success Model, covering system quality, information quality, human resource capacity, and data integration. The findings show that e-BMD is operational for automated bookkeeping and reporting but is not yet optimally institutionalized. The system is technically unreliable during peak hours and carries concentration risk, as one operator manages 8,560 asset objects. A migration discrepancy of 777 units (9.08%) and 281 recorded units of unknown physical whereabouts were also found. e-BMD has strengthened administrative accountability but has not achieved substantive accountability. Aligning human resource capacity, assigning supporting operators, and reconciling asset data periodically are therefore essential.

Keywords: *e-BMD, Regional Property, Substantive Accountability, DeLone and McLean, Digital Governance*

INTRODUCTION

The government's commitment to transparency and accountability in regional financial governance requires the orderly, accurate, and integrated management of Regional Property (Barang Milik Daerah, BMD) (Mardiasmo, 2009). BMD management is a complex domain because it involves multiple actors, several stages of the logistics cycle, and intricate administrative supporting documents (Siregar, 2018). This complexity frequently gives rise to a *data gap* between bookkeeping records and the physical condition of assets in the field. In the era of the Electronic-Based Government System (Sistem Pemerintahan Berbasis Elektronik, SPBE), the transformation from the desktop-based SIMDA-BMD application to the web-based Electronic Information System for Regional Property (e-BMD), in accordance with Minister of Home Affairs Regulation Number 47 of 2021, constitutes a strategic step toward strengthening asset governance.

Although digitalization is promoted as a national agenda, the adoption of asset management information systems in operational work units often encounters structural constraints (Haryanto et al., 2020). Previous studies indicate that unstable system quality and limited human resource (HR) capacity are the principal barriers to the effectiveness of asset governance applications (Supriyanto, 2015). An evaluation of SIPD e-BMD usage in several regions recorded suboptimal usability scores, mainly owing to inaccurate report calculations and technical troubleshooting problems (Sulistiyanti, 2025). Evidence from other local governments points in the same direction. In a quantitative evaluation of SIMDA-BMD in Grobogan Regency (87 valid respondents, partial least squares), system quality and information quality significantly shaped perceived usefulness, yet neither significantly affected net benefits ($t = 1.33$ and 0.73 ,

against a critical value of 1.96); the author attributed this to server downtime under simultaneous access and to incomplete asset data entry (Laksono, 2017). A qualitative evaluation at the Regional Revenue Agency of Bitung City under Minister of Home Affairs Regulation Number 47 of 2021 likewise reported limited HR competence, delayed recording of asset mutations, and differences between physical assets and the Inventory Cards (Muchadi et al., 2025). By contrast, a case study of e-BMD at a state vocational school in Mataram reported that HR training, re-inventory of assets, barcode labelling, and integrated digital reporting improved administrative orderliness, accelerated report preparation, and reduced recording errors (Budiarti et al., 2026). Moreover, the implementation of asset management applications in local governments still tends to focus on macro-level compliance with financial reporting, without addressing data reliability in the property-user units that manage dynamic assets on a daily basis. However, the studies above do not quantify migration discrepancies between successive systems or physical conformity at the level of a single property-user unit, which is the gap addressed in this study.

The empirical conditions at the General Bureau of the Regional Secretariat of West Sulawesi Province illustrate this *research gap*. As a work unit that supports the operations of the regional leadership and the regional government household, the General Bureau manages highly dynamic and mobile assets, such as operational vehicles, information and communication technology (ICT) equipment, and meeting supplies. Although the West Sulawesi Provincial Government has obtained an unqualified audit opinion (Wajar Tanpa Pengecualian, WTP) and an improved SPBE index, e-BMD data entry in the General Bureau suffers from a fundamental workload imbalance. Approximately 8,560 asset objects depend, for data input and updating, on only one active operator out of a total of 63 civil servants (ASN) in the Finance and Assets Division.

The urgency of resolving this problem increases when the imbalance in HR capacity directly affects the quality of asset information. The migration of data from SIMDA-BMD (2025) to e-BMD (2026) was found to leave a discrepancy of 777 units (9.08%) that requires reconciliation. In addition, the inventory results show 85 types of items, totaling 281 units, that are recorded in the system but whose physical whereabouts are unknown (a physical conformity rate of 0%). These findings indicate that the e-BMD application cannot, by itself, guarantee the reliability, accuracy, and traceability of assets unless it is supported by consistent business processes and data updating.

To address these challenges, this study offers a conceptual solution in the form of a holistic evaluation of e-BMD implementation using an adaptation of the DeLone and McLean (2003) Information Systems Success Model. The study measures not only the technical dimensions of system quality and information quality but also integrates two organizational contextual factors, namely HR capacity and data integration. Its novelty lies in demonstrating that the digitalization of asset records does not automatically produce digital governance, and in formulating an event-based reporting workflow and a reconciliation instrument to bridge the separation between digital system data and the physical existence of assets.

This study aims to analyze in depth the implementation of the e-BMD information system at the General Bureau of the Regional Secretariat of West Sulawesi Province and to examine the extent to which this implementation contributes to improving the accountability of BMD management. The study is expected to provide an exploratory–explanatory picture of the drivers of and barriers to asset digitalization at the level of operational work units.

RESEARCH METHODS

This study employs a qualitative approach with an explanatory case study design to explain in depth *how* and *why* e-BMD implementation unfolds and what its effects are on the accountability of regional asset management (Yin, 2018). The research locus was determined purposively as the General Bureau of the Regional Secretariat of West Sulawesi Province, principally because this work unit plays a strategic role as the Authorized Property User (Kuasas Pengguna Barang) and handles assets with a very high level of dynamism and mobility.

The data comprise primary and secondary data. Primary data were obtained through in-depth interviews with nine key informants selected by purposive sampling on the basis of their command of information and their direct involvement in the BMD management cycle (Sugiyono, 2019). The key informants comprised the Head of the General Bureau (one person), the Head of the Finance and Assets Division (one person), the e-BMD information system operator, who also serves as Assistant Property Custodian (one person), User Property Custodians (three persons), and BMD user staff (three persons). The number of informants was determined not by statistical representativeness but by data sufficiency until data saturation was reached. In addition to the interviews, the primary data were supported by direct observation of e-BMD application operations and the dashboard display, as well as physical inspection of assets in the field. Secondary data were gathered through documentary study of the Financial Statements, the Inventory Lists, the SIMDA-BMD 2025 and e-BMD 2026 recapitulations, the Governor's Decree, Provincial Regulation Number 2 of 2025, and related regulations.

Data validity was tested rigorously through triangulation, comprising source triangulation and method triangulation. Source triangulation was conducted by comparing information across organizational levels (leadership, management, operators, and property custodians). Method triangulation was applied by cross-checking verbal interview accounts against official e-BMD documents, Handover Minutes (Berita Acara Serah Terima, BAST), Inventory Cards (Kartu Inventaris Barang, KIB), and physical observation of vehicles and equipment.

Data were analyzed using the interactive model of Miles, Huberman, and Saldana (2014), carried out continuously through three main stages: data reduction, data display, and conclusion drawing/verification. Raw data from interview transcripts and documents were categorized into principal themes based on the DeLone and McLean theoretical framework (system quality, information quality, HR capacity, and data integration) and the dimensions of public accountability (transparency, report conformity, and ease of audit). The data were then presented as analytical narratives and comparative matrix tables in order to draw valid and verifiable conclusions. Quantitative indicators (asset counts, ratios, and percentages) were extracted from the database files, inventory records, and the Governor's Decree and were used descriptively to corroborate the qualitative themes; percentages not reported in the source documents were calculated by the authors.

RESULTS AND DISCUSSION

Result

Operational Status of e-BMD Implementation

The implementation of e-BMD at the General Bureau of the Regional Secretariat of West Sulawesi Province is operational. The web-based e-BMD application is used for the bookkeeping, inventory, supervision, control, and reporting of regional assets. The automated report recapitulation feature was reported by informants to ease the preparation of periodic reports compared with the manual mechanisms of the SIMDA-BMD period. The e-BMD

dashboard also visualizes procurement data, reports on status transfers, and the classification of asset groups.

Nevertheless, interviews, observation, and documents revealed several obstacles across the four principal dimensions, as presented below.

System Quality. Although the interface is regarded as user-friendly, the operational reliability of e-BMD remains low. During peak hours ahead of reporting deadlines, the system frequently experiences server overload, reduced access speed, and failures to save data (errors during input). The system status often stalls in the ‘Processing...’ mode when reports are generated. In addition, use of the system's features is concentrated in the main operator, whereas property-user staff interact with the application only to a very limited extent.

Information Quality. The e-BMD system recorded 7,783 asset units in 2026, dominated by the Equipment and Machinery group with 7,524 units (Table 1). Although the structure of the data columns in e-BMD is relatively complete, the substantive accuracy and currency of the data are not yet optimal. Discrepancies occur mainly in highly mobile assets.

Table 1. Composition and Volume of the General Bureau's Assets in the e-BMD System, 2026

No	Asset Group / Type	Quantity (Units)	Percentage (%)	Operational Nature and Asset Mobility
1	Land	2	0.03%	Static (0% risk of relocation)
2	Roads, Irrigation, and Networks	4	0.05%	Static
3	Buildings and Structures	48	0.62%	Static
4	Equipment and Machinery	7,524	96.67%	Highly dynamic / high mobility
5	Other Fixed Assets	205	2.63%	Dynamic
Total Recorded Assets		7,783	100.00%	Dominated by Equipment and Machinery

Source: e-BMD database interface, General Bureau, Regional Secretariat of West Sulawesi Province (processed by the authors, 2026)

Human Resource Capacity. A marked imbalance was found between the volume of work and the availability of implementing personnel. The General Bureau manages approximately 8,560 asset objects, all of whose data input is borne by only one active operator, even though the Finance and Assets Division has 63 civil servants in total (Table 2). Informants reported that the entire bookkeeping and data-updating workflow halts whenever the main operator is unavailable.

Table 2. Staff Composition and Workload Ratio of e-BMD Management

No	Staffing and Workload Description	Value / Number	Analytical Note
1	Total Staff of the Finance and Assets Division	63 civil servants	Spread across three sub-divisions (Accounting, Verification, Planning)
2	Active e-BMD System Operator	1 person	Serves as Assistant Property Custodian
3	Estimated Total Asset Objects/Units Managed	± 8,560 units	Covers all asset groups
4	Workload Ratio (Assets : Operator)	8,560 : 1	Single-operator workload ratio (concentration risk)
5	Ratio of Finance/BMD Staff : Operator	63 : 1	Only 1.59% of staff master system operations

Source: Staffing and asset recapitulation, General Bureau, Regional Secretariat of West Sulawesi Province (processed by the authors, 2025/2026)

Data Integration and Field Disparity. The document evaluation shows two significant data disparities. The first is the *migration gap*: the closing balance of SIMDA-BMD for 2025 recorded 8,560 asset units, whereas the opening balance of e-BMD for 2026 recorded 7,783 units, leaving a migration difference of 777 units (9.08%) that requires continued verification

and reconciliation (Table 3). The second is the *physical discrepancy*: the inventory identified 85 types of items, totaling 281 units, that are recorded in the system but whose physical existence could not be found in the field (a physical conformity rate of 0%). Most of these items are recorded in 'Good' condition in the system (76 item types) (Table 4).

Table 3. Comparison Matrix of Data Migrated from SIMDA-BMD (2025) to e-BMD (2026)

No	Asset Category / Group	SIMDA (2025)	e-BMD (2026)	Difference	Reconciliation Status
1	Land	2 units	2 units	0	Matched
2	Roads, Irrigation, and Networks	4 units	4 units	0	Matched
3	Buildings and Structures	48 units	48 units	0	Matched
4	Equipment and Machinery	7,525 units	7,524 units	1 unit	1-unit discrepancy
5	Other Fixed Assets	205 units	205 units	0	Matched
6	Construction in Progress	2 units	0 units	2 units	Not yet accommodated
7	Miscellaneous Assets	774 units	0 units	774 units	Not yet integrated
Total Asset Objects		8,560 units	7,783 units	777 units	Migration gap of 9.08%

Source: Extraction of the SIMDA-BMD (2025) and e-BMD (2026) database files

Table 4. Results of the Inventory of Conformity between e-BMD Records and the Physical Existence of Assets

No	Inventory Parameter	System Record (e-BMD)	Physical Reality in the Field	Physical Conformity (%)
1	Total Types of Items Recorded	85 item types	Whereabouts unknown	0%
2	Total Item Units	281 units	Not found physically	0%
3	Condition Status: Good	76 item types	Physically missing / non-existent	0%
4	Condition Status: Fair	3 item types	Physically missing / non-existent	0%
5	Condition Status: Poor (Severely Damaged)	6 item types	Physically missing / non-existent	0%
Substantive Conformity Status		Recorded in system (100%)	Physically found (0%)	Disparity of 100%

Source: Field inventory results, Finance and Assets Division, General Bureau (processed by the authors, 2025/2026)

Furthermore, the proposed write-off of severely damaged assets through destruction (Table 5) shows that the General Bureau accounts for the largest share of the province's assets slated for destruction, with all of the proposed items physically in severely damaged condition.

Table 5. Summary of the General Bureau's Regional Property Written Off through Destruction

No	Write-Off Proposal Parameter	Value / Volume	Percentage / Remarks
1	Number of Proposed Asset Groups / Rows	146 groups	Largest share of the Governor's Decree total (189 groups)
2	Number of Severely Damaged Units	294 units	Largest share of the Decree total (372 units)
3	Actual Physical Condition of Items	100% severely damaged	Cannot be utilized or operated
4	Contribution of the General Bureau's Asset Value in the Decree	89.78%	The General Bureau accounts for the largest share of the province's destruction

Source: Appendix to West Sulawesi Governor's Decree Number 569 of 2025

Summary of Key Quantitative Indicators

Table 6 consolidates the quantitative indicators reported in Tables 1 to 5 and adds proportions calculated by the authors from those tables. Three results stand out. First, the

migration gap of 777 units is concentrated almost entirely in one category: Miscellaneous Assets account for 774 of the 777 units (99.61%), whereas Equipment and Machinery differ by only one unit. Second, the 281 units recorded in e-BMD but not found physically equal 3.61% of the 7,783 recorded units. Third, the workload ratio is 8,560 assets to one active operator, who represents 1.59% of the 63 Finance and Assets Division staff.

Table 6. Summary of Key Quantitative Indicators by Dimension

No	Dimension	Indicator	Value
1	System quality	Server overload, slow access, and failed saves before reporting deadlines	Reported by informants and observed; no server-log data analyzed
2	Information quality	Share of Equipment and Machinery in e-BMD records	7,524 of 7,783 units (96.67%)
3	Information quality	Units recorded in e-BMD but not found physically	281 units in 85 item types (3.61% of 7,783 units; physical conformity 0%)
4	HR capacity	Assets per active e-BMD operator	8,560 : 1
5	HR capacity	Operator share of Finance and Assets Division staff	1 of 63 civil servants (1.59%)
6	Data integration	Migration gap, SIMDA-BMD (2025) to e-BMD (2026)	777 of 8,560 units (9.08%)
7	Data integration	Share of the migration gap from Miscellaneous Assets	774 of 777 units (99.61%)
8	Accountability	General Bureau share of the Governor's Decree write-off by destruction	294 of 372 units (79.03%); 146 of 189 groups (77.25%)

Source: Authors' calculation based on Tables 1 to 5 (2026)

Discussion

The findings show that the e-BMD information system has so far achieved only administrative accountability and has not yet reached substantive accountability. This pattern can be explained through a synthesis of the DeLone and McLean (2003) framework, digital governance theory, and the principles of the Government Internal Control System (Sistem Pengendalian Intern Pemerintah, SPIP). The quantitative indicators in Table 6 support this reading: the 9.08% migration gap and the 281 units (3.61% of recorded units) that could not be located physically show that records exist in the system without full physical verification.

Why do these results occur? First, in terms of system quality and information quality, e-BMD was designed in a centralized manner by the Ministry of Home Affairs to meet the regulatory standards of Minister of Home Affairs Regulation Number 47 of 2021. However, the system's unreliability, being prone to errors and lag during peak load, hampers the timeliness of data updates. System instability causes updates of transaction data on asset transfers, maintenance, or damage to be frequently delayed. This confirms the finding of Sulistyanti (2025) that technical weaknesses in e-government applications directly reduce the reliability of report outputs. The same pattern appears in Grobogan Regency, where server downtime under simultaneous access and incomplete data consolidation explained why system quality did not translate into significant net benefits (Laksono, 2017). The peak-hour instability observed here may therefore be a recurring operational weakness of regional asset information systems rather than a feature of one work unit.

Second, with regard to human resource capacity, the single-operator dependency is the main root cause of low information quality. A ratio of one operator to 8,560 asset objects creates a bottleneck in the administrative workflow. Although the leadership has provided regulatory support through West Sulawesi Provincial Regulation Number 2 of 2025, this support has not been translated into additional technical HR allocation or a proportional distribution of workload. This obstacle is consistent with the studies of Haryanto et al. (2020) and Supriyanto (2015),

which emphasize that the effectiveness of asset management information systems in the regions is severely constrained by the low ratio and capacity of operators. Muchadi et al. (2025) similarly identified limited HR competence and weak internal supervision at the Regional Revenue Agency of Bitung City, with delayed recording of asset mutations as a consequence. The contrast with Budiarti et al. (2026) is instructive: where an organization invested in HR training, re-inventory, and barcode labelling, e-BMD was reported to improve the orderliness and speed of reporting. By comparison, the General Bureau, with a ratio of 8,560 assets to one operator and only 1.59% of Finance and Assets Division staff operating the system, appears not to have made comparable investments.

Third, with respect to data integration and public accountability, the 777-unit migration discrepancy and the 281 units whose physical traces have been lost reveal weak audit-trail consistency. From the SPIP perspective (Arens et al., 2017), accountability demands reliable reporting that can be substantiated through the physical safeguarding of assets. In the General Bureau, changes in the status of items in the field (such as severely damaged vehicles or ICT equipment transferred between units) do not automatically update the e-BMD database because of the complexity of the administrative procedures for asset write-off. As a result, the digital system functions merely as a ‘passive archive’ rather than as a real-time oversight instrument. This pattern is consistent with the discrepancies between physical items and Inventory Cards reported by Muchadi et al. (2025) and with the incomplete asset data that limited information quality in Grobogan (Laksono, 2017). What distinguishes the present case is the concentration of the gap: 774 of the 777 units missing after migration (99.61%) belong to a single category, Miscellaneous Assets, which suggests a category-level migration or mapping problem rather than random entry errors, a hypothesis that should be verified through reconciliation.

The theoretical synthesis indicates that digitalization is not equivalent to digital governance (Laudon & Laudon, 2012). Digital governance requires a harmonious combination of technology availability, regulatory readiness, evenly distributed HR capacity, and integration between electronic data and physical evidence in the field. Without a continuous data reconciliation mechanism and event-based reporting, e-BMD produces only formalistic transparency, without giving auditors or the public any assurance of data reliability.

Compared with the three studies reviewed, which relied on perception-based survey data (Laksono, 2017), compliance with regulation (Muchadi et al., 2025), and a narrative of implementation strategies (Budiarti et al., 2026), the present study adds record-level evidence of migration and physical discrepancies (Tables 3, 4, and 6). Because this evidence comes from a single work unit, the comparison is analytical rather than statistical, and the practical implications (assigning supporting operators, event-based reporting, and periodic reconciliation) should be tested in other work units.

CONCLUSION

The implementation of e-BMD at the General Bureau of the Regional Secretariat of West Sulawesi Province has succeeded operationally in bookkeeping and in simplifying routine reporting (7,783 asset records in e-BMD, 96.67% of them Equipment and Machinery), but it has not been optimally institutionalized, as it still faces technical reliability constraints, an imbalance in HR capacity caused by dependence on a single operator (8,560 assets per operator, with the operator making up only 1.59% of the 63 Finance and Assets Division staff), and suboptimal integration of the data migrated from SIMDA-BMD to e-BMD (a gap of 777 units, or 9.08%, of which 774 units were Miscellaneous Assets not yet integrated). With regard to its contribution to accountability, e-BMD has strengthened administrative accountability mechanisms and document traceability but has not yet realized substantive accountability, because the system

cannot guarantee conformity between electronic data and the actual physical condition of assets, as evidenced by the 777-unit (9.08%) migration discrepancy and the 281 units (85 item types, or 3.61% of recorded units) that could not be found physically, a physical conformity rate of 0% for the items inventoried. Strengthening accountability therefore requires aligning workflows, distributing HR roles (starting with supporting operators to reduce the 8,560 : 1 ratio), and reconciling data on a continuous basis, beginning with the 774 unintegrated Miscellaneous Assets and the 281 units not found physically. Theoretically, this study extends the DeLone and McLean framework by integrating the dimension of public-sector accountability. Its limitation lies in the single-locus qualitative approach (one work unit and nine informants), so the findings cannot be statistically generalized to all regional work units. Future research is advised to test the relationships between information system variables and asset accountability using quantitative or mixed-methods approaches with samples drawn from multiple regional work units or regional governments.

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