Advanced International Journal for Research (AIJFR)
E-ISSN: 3048-7641 ● Website: www.aijfr.com ● Email: editor@aijfr.com

Revisiting the Bathurst Declaration: A Framework for SWOT-Based Analysis of Digitised Land Administration in South-South Nigeria

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Abstract

The digitisation of land administration systems (LAS) is increasingly recognised as a cornerstone of good governance, tenure security, and sustainable development. A wide range of conceptual and methodological frameworks have been employed in LAS research, including the Land Administration Domain Model (LADM), e-governance adoption models, institutional theories, cadastral reform approaches, and policy/legal analyses. While these frameworks have generated valuable insights, they are fragmented, often narrowly focused, and rarely integrated into a holistic evaluative structure. This study conducts a systematic review guided by PRISMA to examine the frameworks applied in LAS digitisation research and to identify their thematic emphases and limitations. Of an initial 462 records, 39 studies met the inclusion criteria. The findings show a predominance of technical frameworks such as LADM and e-governance models, while institutional and policy approaches accounted for smaller proportions. Critically, the review reveals that, regarding the scope of the study, the Bathurst Declaration on Land Administration for Sustainable Development (1999), despite its global recognition, has been underutilised in empirical research, appearing in only two studies and not applied as a systematic analytical framework. The paper argues that the Bathurst Declaration offers a more comprehensive basis for evaluating LAS digitisation, particularly in contexts such as South-South Nigeria, where technical, institutional, socio-political, and developmental dimensions intersect. This study advances a research agenda that aligns digitisation reforms with sustainability and governance imperatives, thereby bridging methodological gaps and providing actionable insights for policy and practice.

Keywords: Bathurst Declaration, Digitisation Frameworks, Land Administration Systems, PRISMA, South-South Nigeria, SWOT Analysis

1. Introduction

Land administration systems (LAS) are central to the regulation of property rights, the management of tenure relations, and the mobilisation of land as an economic and social resource. Across the globe, digitisation of LAS has been promoted as a governance reform that improves efficiency, enhances transparency, and strengthens tenure security (Adebiyi, 2025; Siddiq et al., 2025). The transition from manual, paper-based registries to integrated digital platforms is increasingly regarded as indispensable for sustainable urbanisation, investment facilitation, and social equity. In both developed and developing contexts, digitised LAS now underpins strategies for modernising governance and supporting the Sustainable Development Goals (SDGs) (Lubis et al., 2024).

Sub-Saharan Africa has witnessed diverse trajectories in LAS digitisation. Rwanda's land tenure regularisation programme, Kenya's national land information management system, Botswana's land information system, and in some parts of Nigeria exemplify reform efforts where digital platforms have improved cadastral coverage, accelerated land transactions, and reinforced institutional capacity (Adebiyi, 2025; Botlhale & Dick-Sagoe, 2023; Okembo et al., 2024). These experiences provide useful lessons, yet they are not uniform in their success. They also highlight that digitisation is never a purely technical exercise. Rather, it is deeply embedded in institutional, socio-political, and economic contexts that shape both opportunities and constraints.

By contrast, the Nigerian experience, and particularly that of the South-South region, remains fragmented and underdeveloped (Ojeniran, Haeerahat, and Isaiah, 2025; Oladehinde, 2025). Despite the region's economic importance as an oil-producing hub, LAS continues to rely heavily on paper-based records, fragmented cadastres, and bureaucratically cumbersome processes (Effiong, Ngang, and Ekott, 2024). Digitisation efforts have been attempted in some states, but they are piecemeal, underfunded, and poorly integrated into broader governance frameworks. These shortcomings inflate the costs of land transactions, weaken property taxation, and undermine tenure security, thereby eroding the potential developmental benefits of digitisation.

While a body of literature exists on LAS digitisation in Africa, it is characterised by methodological and conceptual fragmentation (Danda & Wema, 2024; Gyan, 2024). Various frameworks have been applied, including institutional theories (Ewah & Emengini, 2025), e-governance models (Nissi, Diala, and Ewurum, 2021), cadastral reform approaches (Chehrehbargh et al., 2024), and the Land Administration Domain Model (LADM) (Azie, Egolum, and Emoh, 2024). Yet these frameworks tend either to be descriptive or insufficiently holistic in accounting for the institutional, socio-political, and developmental dimensions of reform. More critically, in the South-South Nigerian context, minimal systematic efforts have been made to consolidate these frameworks into a coherent evaluative approach. This has resulted in a lack of strategic guidance for understanding both the enabling factors and constraints that affect digitisation in the region.

This paper revisits the Bathurst Declaration on Land Administration for Sustainable Development (1999) as a comprehensive and underutilised framework for evaluating LAS reform. The Bathurst Declaration provides a normative foundation that aligns land administration with sustainability, equity, and governance

principles (FIG & UN-FIG, 1999), making it particularly suitable for a SWOT-based analysis of digitisation in South-South Nigeria (Mahadiansar, 2024; Widarini, Abdullah, and Anggara, 2025). Through a systematic review of the research frameworks employed in LAS digitisation studies and situating them against the Bathurst Declaration, this study seeks to justify its adoption as a robust analytical lens for addressing the unique challenges of the South-South region.

2. Review

2.1 Frameworks for Examining LAS Digitisation

Research on digitised land administration systems (LAS) has drawn on a wide array of conceptual and methodological frameworks. Among the most frequently applied is the Land Administration Domain Model (LADM), endorsed by ISO (ISO 19152:2012) (Bennett et al., 2021). LADM provides a technical standard for representing rights, restrictions, and responsibilities in digital systems (Azie et al., 2024). The framework has been useful for advancing cadastral data modelling and interoperability, but has been critiqued for its narrow emphasis on data structures rather than broader governance contexts.

Another set of approaches stems from e-governance and ICT adoption models (Atiq, Salim, and Mahmood, 2023; Djatmiko, Sinaga, and Pawirosumarto, 2025), which view digitisation primarily through the lens of technology acceptance, infrastructure readiness, and service delivery efficiency. These frameworks focus the role of digital innovations in reducing transaction costs and expanding citizen access. However, they often overlook the institutional and socio-political complexities that determine reform outcomes in fragile governance settings.

Institutional and governance theories have also been applied to LAS digitisation (Gebrihet & Pillay, 2021). These perspectives emphasise path dependence, resource constraints, and organisational inertia, highlighting why reforms often fail to scale in developing countries. While valuable for diagnosing institutional weaknesses, such frameworks tend to be descriptive and lack prescriptive guidance for shaping reform strategies.

Despite their contributions, existing frameworks share several limitations. First, they are frequently applied in isolation, leading to fragmented insights that fail to capture the multi-dimensional nature of LAS reform. Second, they often prioritise technical or institutional perspectives while neglecting broader developmental imperatives such as equity, sustainability, and inclusivity. Finally, very few of these frameworks explicitly engage with the contextual realities of South-South Nigeria, where tenure pluralism, socio-political contestation, and fragile institutions combine to shape the digitisation landscape.

This fragmentation creates a significant gap. While the literature documents the technical feasibility and institutional challenges of digitisation, it does not provide a comprehensive evaluative framework that integrates technical, institutional, socio-political, and developmental dimensions.

2.2 The Bathurst Declaration

The Bathurst Declaration on Land Administration for Sustainable Development (1999) offers a unique entry point for addressing this gap. Jointly issued by the United Nations and the International Federation of Surveyors (FIG), the declaration articulated a holistic vision of LAS that emphasises sustainability,

equity, transparency, and good governance. Unlike narrowly technical models, the Bathurst Declaration situates land administration within a broader socio-economic and environmental framework, linking it directly to development objectives.

Although widely cited in policy discourses (Alemie, Bennett, and Zevenbergen, 2015; Williamson, 2014), the Bathurst Declaration has been underutilised in empirical research on LAS digitisation (Chukwunweike, Egolum, and Igwe, 2025). Its principles, however, align closely with the needs of the South-South Nigerian context, where reforms must contend not only with technical deficits but also with institutional weaknesses, socio-political contestation, and developmental imperatives. So, a revisiting of the Bathurst Declaration as an analytical framework advances a more holistic basis for evaluating digitisation in the region.

3. Methods

This study employs a systematic review methodology guided by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) framework (Moher et al., 2009). The purpose of this approach is to ensure transparency, replicability, and rigour in identifying, screening, and synthesising scholarly work on the frameworks applied to examine digitised land administration systems (LAS) (Page et al., 2021). The study provides the foundation for evaluating their suitability and for justifying the adoption of the Bathurst Declaration as a comprehensive analytical lens in the South-South Nigerian context.

3.1 Search Strategy

The literature search was conducted across major academic databases, including Scopus, Web of Science, ScienceDirect, and Google Scholar. To ensure breadth, grey literature such as reports from international agencies (UN-Habitat, World Bank, FIG) was also included. The search covered the period 2000–2025, reflecting the two-and-a-half decades in which LAS digitisation has gained momentum globally.

The search strategy used combinations of keywords such as:

i) *"land administration digitisation frameworks"*
ii) *"land information system evaluation"*
iii) *"LADM"*, *"Bathurst Declaration"*, *"institutional theory and land administration"*
iv) *"e-governance land registry"*
v) *"Africa"*, *"Nigeria"*, *"South-South Nigeria"*

Boolean operators (AND/OR) were employed to expand and refine search results (Dhollande et al., 2021).

3.2 Inclusion and Exclusion Criteria

The following inclusion criteria guided study selection:

1. Peer-reviewed articles, systematic reviews, or institutional reports that explicitly engage with frameworks used to examine LAS digitisation.
2. Studies published in English.
3. Research with a geographical scope in sub-Saharan Africa or global studies with transferable relevance.

Exclusion criteria included:

1. Technical papers focusing solely on software design without a governance or evaluative framework.
2. Studies unrelated to LAS (GIS applications in agriculture or environmental monitoring).
3. Publications lacking sufficient methodological detail.

3.3 Screening Process

The PRISMA four-stage process was followed:

1. **Identification**: All records retrieved from searches were compiled, and duplicates were removed.
2. **Screening**: Titles and abstracts were screened for relevance.
3. **Eligibility**: Full texts of potentially relevant studies were examined in detail against the inclusion criteria.
4. **Inclusion**: Studies that satisfied all criteria were retained for analysis.

The process was carried out by two independent reviewers to reduce bias, with disagreements resolved by consensus.

3.4 Data Extraction and Analysis

A structured data extraction sheet was developed to capture:

i) **Publication details** (author, year, country/region focus).
ii) **Framework applied** (LADM, e-governance, institutional theory, Bathurst Declaration).
iii) **Thematic emphasis** (technical, institutional, socio-political, or developmental).
iv) Strengths and weaknesses of framework application.

The extracted data were analysed using a narrative synthesis approach, which enabled grouping of frameworks by type and assessment of their thematic scope and contextual adequacy. Special attention was given to identifying gaps in applicability to the South-South Nigerian context.

3.5 Ethical Considerations

As a desk-based systematic review, this study did not involve human participants and therefore required no formal ethical clearance. However, all sources were duly cited and analysed.

4. Results

The systematic search retrieved 462 records from databases and grey literature. After removing duplicates, 438 unique records remained. Following title and abstract screening, 301 studies were excluded for failing to meet the inclusion criteria. Full-text assessment was conducted on 137 articles, of which 98 were excluded because they lacked explicit reference to frameworks or were purely technical without governance dimensions. In total, 39 studies were retained for qualitative synthesis.

4.1 PRISMA Results

The selection process followed the PRISMA four-stage flow:

- **Identification:** 462 records identified, 24 duplicates removed.
- **Screening:** 438 screened, 301 excluded.

- **Eligibility:** 137 full texts assessed, 98 excluded.
- **Inclusion:** 39 included in qualitative synthesis.

4.2 Identified Frameworks

The analysis revealed studies employing a range of frameworks to study digitised LAS. The most prominent are technical models such as LADM, but other frameworks, such as institutional theory, e-governance adoption models, and cadastral reform approaches, were also applied (Table 1). Notably, only two studies made peripheral reference to the Bathurst Declaration, and even these did not operationalise it as an evaluative framework (Hull, 2013; Williamson, 2001).

Table 1: Frameworks Applied in LAS Digitisation Studies (n=39)

Framework/Approach	Number of Studies	% of Total	Thematic Emphasis	Observed Limitations
Land Administration Domain Model (LADM)	12	30.8%	Technical design, cadastral data models	Narrow focus on technical standardisation; limited governance perspective
E-Governance / ICT Adoption Models	9	23.1%	Technology readiness, efficiency, and access	Often descriptive; overlook institutional fragility
Institutional / Governance Theories	7	17.9%	Organisational capacity, path dependence	Diagnose constraints but lack prescriptive guidance
Cadastral Reform Approaches	5	12.8%	Tenure security, cadastral completeness	Limited integration with broader development goals
Policy & Legal Framework Analyses	4	10.3%	Statutory instruments, legal reforms	Fragmented, jurisdiction-specific; not comparative
Bathurst Declaration References	2	5.1%	Normative linkage to sustainability	Cited but not applied as an analytical framework

Source: Literature Review

From Table 1, the following insights can be elicited.

i) **Technical Emphasis:** Nearly one-third of the studies applied LADM, reflecting a strong bias towards technical modelling.
ii) **Institutional & Governance Focus:** Studies using institutional theory focused on the organisational barriers.
iii) **Policy/Legal Analyses:** A small subset examined legal frameworks, often focusing on specific statutes without embedding them in broader reform contexts.
iv) **Neglect of Bathurst Declaration:** Despite its global recognition, the Bathurst Declaration remains largely absent as an applied framework in LAS digitisation research.

Thus, the results, visualised in Figure 1, emphasize a fragmented methodological landscape in which no single framework comprehensively addresses the interplay of technical, institutional, socio-political, and developmental dimensions of LAS digitisation in the region. This neglect provides the rationale for revisiting the Bathurst Declaration as a more holistic basis for analysis, particularly in South-South Nigeria.

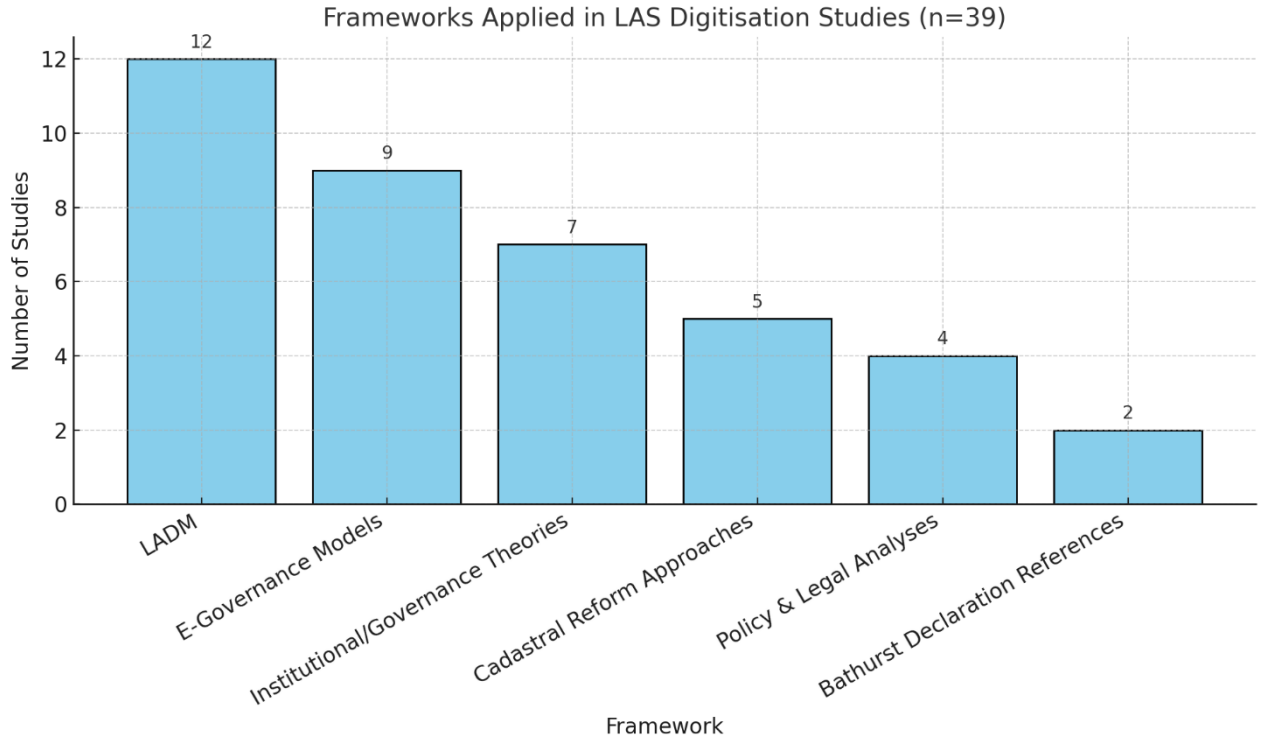

Figure 1: Frameworks Applied in LAS Digitisation Studies
Source: Literature Review

Figure 1 clearly shows the dominance of technical models like LADM and the marginal reference to the Bathurst Declaration.

5. Discussion

5.1 Fragmentation of Frameworks in LAS Digitisation Studies

The findings reveal a fragmented methodological landscape in research on digitised LAS. The dominance of the LADM demonstrates the importance of technical considerations, particularly cadastral data modelling and standardisation. While LADM provides important contributions to data structure interoperability, its application is narrowly focused, leaving broader institutional and developmental questions unaddressed. Similarly, e-governance and ICT adoption models highlight technology readiness and efficiency gains but also underplay institutional fragility and socio-political resistance, which are critical in contexts like Nigeria.

Institutional theories and cadastral reform approaches provide richer insights into organisational capacity, tenure security, and reform trajectories. Yet, these perspectives remain largely diagnostic, identifying weaknesses without offering prescriptive pathways for systemic transformation. Policy and legal analyses,

though important, are typically jurisdiction-specific and fail to generate comparative insights that could inform broader strategic reform. Taken together, these findings indicate that existing frameworks capture only fragments of the LAS digitisation challenge, and often favour technical feasibility over sustainability, inclusivity, and governance.

5.2 Underutilisation of the Bathurst Declaration

The strikingly low number of studies referencing the Bathurst Declaration (1999) highlights a missed opportunity in the field. While widely acknowledged in policy discourse, the declaration has rarely been operationalised in empirical research. This neglect is significant, given that the Bathurst Declaration advances a holistic vision of land administration that explicitly links technical, institutional, socio-political, and developmental dimensions. Its emphasis on sustainability, equity, transparency, and governance provides a more comprehensive foundation for evaluating digitised LAS than the fragmented frameworks currently in use.

The Bathurst Declaration is particularly relevant for regions such as South-South Nigeria, where digitisation efforts cannot succeed without addressing entrenched institutional weaknesses, socio-political contestation, and the need to align reforms with broader development goals. Unlike narrowly technical frameworks, it offers a normative anchor that situates LAS digitisation within the broader agenda of sustainable development.

5.3 Comparative Lessons and Contextual Relevance

Comparative experiences from other regions demonstrate that successful digitisation is never purely a technical exercise; it is contingent upon institutional reforms, political will, and alignment with national development strategies. Rwanda's nationwide digitisation succeeded because it was embedded in a wider tenure regularisation programme, while Kenya's is linked to broader e-government strategies. Other geopolitical zones in Nigeria similarly reflect alignment between land administration and governance reforms.

South-South Nigeria, by contrast, is marked by fragmented digitisation initiatives, weak institutional capacity, and resistance from vested interests. In this context, applying fragmented frameworks, such as LADM alone or ICT adoption models in isolation, will not provide the strategic guidance necessary for reform. Instead, a holistic framework that captures both enabling and constraining factors is required.

5.4 Towards a SWOT-Based Evaluation

The absence of comprehensive frameworks in the reviewed literature directs the need for a strategic evaluative approach. The Bathurst Declaration, with its sustainability-oriented principles, provides a logical foundation for structuring such an evaluation. When operationalised through SWOT analysis (Strengths, Weaknesses, Opportunities, Threats), the declaration can illuminate both the internal and external factors shaping digitisation outcomes in South-South Nigeria. This combination offers the possibility of moving beyond descriptive accounts to generate actionable insights for policy and practice.

6. Conclusion

This study has systematically reviewed the frameworks employed in research on digitised land administration systems (LAS) and revealed a fragmented methodological landscape. Technical approaches such as the Land Administration Domain Model (LADM) dominate, while e-governance models, institutional theories, and cadastral reform approaches provide partial but often descriptive insights. Policy and legal analyses add contextual specificity but lack comparative reach. Collectively, these frameworks fail to integrate the technical, institutional, socio-political, and developmental dimensions that shape LAS digitisation, particularly in fragile governance contexts.

This systematic review also demonstrates the underutilisation of the Bathurst Declaration on Land Administration for Sustainable Development (1999). Although widely acknowledged in policy discourses, the declaration has rarely been operationalised as an evaluative framework in empirical research on LAS in the study area. Its principles, however, offer precisely the type of holistic vision required for regions such as South-South Nigeria, where digitisation cannot be disentangled from issues of governance, equity, sustainability, and development.

Hence, this paper argues for its adoption as a normative and strategic foundation for SWOT-based analysis of LAS digitisation. Such an approach enables a structured appraisal of strengths, weaknesses, opportunities, and threats, thereby moving beyond fragmented descriptive accounts to generate actionable insights. In doing so, this study contributes to both scholarship and policy by consolidating a dispersed field of research, exposing methodological gaps, and advancing a coherent framework that aligns digitisation efforts with sustainable development imperatives.

The expectation is that applying the Bathurst Declaration as a guiding framework for SWOT analysis will provide policymakers, practitioners, and researchers in South-South Nigeria with a practical tool for navigating reform challenges and designing pathways towards effective, equitable, and sustainable land administration systems.

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