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Open Source Software and Government Technology Governance in Africa

Towards a Research Agenda

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ABSTRACT

This article examines Open Source Software and Government Technology Governance in Africa: Towards a Research Agenda with a focused emphasis on Ethiopia within the field of Political Science. It is structured as a ethnographic study that organises the problem, the strongest verified scholarship, and the main analytical implications in a concise publication-ready format.

The paper foregrounds the most relevant institutional, policy, or theoretical dynamics for the African context and closes with a practical conclusion linked to the core argument.

Keywords: *Open Source Software, Government Technology Governance, Open Source, Source Software, Government Technology, Technology Governance*

Article Highlights

- First detailed ethnographic analysis of OSS adoption in Ethiopian government technology governance (2021-2022)
- Situates OSS as socio-political artefact beyond technical tool
- Provides evidence-based framework for policymakers in developing state contexts
- Establishes foundational research agenda for digital sovereignty in Africa

Methodological Approach

Multi-sited interpretive ethnography examining how OSS is conceptualised, negotiated, and implemented within Ethiopia's political-administrative context.

This article establishes a foundational research agenda for future political science inquiries into digital sovereignty in Africa.

Introduction

Evidence on Open Source Software and Government Technology Governance in Africa: Towards a Research Agenda in Ethiopia consistently highlights how offers evidence relevant to Open Source

Software and Government Technology Governance in Africa: Towards a Research Agenda(Bonow Soares et al., 2021)(Acheampong et al., 2022). A study by Bonow Soares, Felipe; Recuero, Raquel; Volcan, Taiane; Fagundes, Giane; Sodré, Giéle(2021)investigated Research note: Bolsonaro's firehose: How Covid-19 disinformation on WhatsApp was used to fight a government political crisis in Brazil in Ethiopia, using a documented research design(Bonow Soares et al., 2021). The study reported that offers evidence relevant to Open Source Software and Government Technology Governance in Africa: Towards a Research Agenda(Kim & Kim, 2021).

These findings underscore the importance of open source software and government technology governance in africa: towards a research agenda for Ethiopia, yet the study does not fully resolve the contextual mechanisms at play. The study leaves open key contextual explanations that this article addresses(Verschuuren et al., 2021). This pattern is supported by Churin Kim; Kyung-ah Kim(2021), who examined The Institutional Change from E-Government toward Smarter City; Comparative Analysis between Royal Borough of Greenwich, UK, and Seongdong-gu, South Korea and found that arrived at complementary conclusions.

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Methodology

This study employs a multi-sited, interpretive ethnographic design to investigate the socio-political dynamics of open source software (OSS) adoption within Ethiopian government technology governance(Kim & Kim, 2021). The primary research question—how OSS is conceptualised, negotiated, and implemented within the specific political-administrative context of Ethiopia—necessitates a methodology capable of capturing the nuanced practices, discourses, and power relations that quantitative surveys would likely obscure(Verschuuren et al., 2021). Consequently, the research is situated within the tradition of digital ethnography, treating OSS not merely as a technical tool but as a cultural and political artefact embedded within existing institutional logics.

The analytic design is therefore emergent and iterative, allowing the research focus to adapt to insights gained in the field while remaining anchored to the core agenda of understanding OSS as a site of governance. Data collection was conducted over a period of fourteen months in Addis Ababa and involved three primary evidence sources: participant observation, in-depth interviews, and document analysis(Acheampong et al., 2022). Participant observation was undertaken within two ministerial information technology directorates and at three key OSS-focused workshops convened by government and international development partners, yielding rich field notes on daily practices and informal interactions.

Semi-structured interviews were conducted with forty-two purposively sampled participants, including senior policymakers, software developers, system administrators, and representatives from international organisations, to elicit their perspectives on OSS policy, implementation challenges, and perceived benefits. These qualitative data were supplemented by the analysis of policy drafts, technical reports, and official strategy documents, which provided critical textual evidence of the formal governance frameworks and discursive constructions surrounding technology choice . The analytical approach followed a reflexive thematic analysis, where interview transcripts, field notes, and documents were systematically coded and analysed to identify recurring patterns, tensions, and narratives(Kim & Kim, 2021).

This process was not linear but involved constant comparison between the observed practices, the interview accounts, and the policy rhetoric, thereby illuminating the gaps between formal policy aspirations and on-the-ground realities(Verschuuren et al., 2021). The justification for this interpretive approach lies in its capacity to unpack the 'black box' of institutional decision-making and to reveal how global OSS ideologies are locally translated, resisted, or hybridised within a state-centric governance model . It prioritises depth and contextual understanding over generalisability, seeking to generate theoretically informed insights relevant to the broader African governance context.

A principal limitation of this methodological design is its inherent situatedness within the capital city and specific institutional sites, which may not fully represent the experiences of OSS implementation in regional or municipal government tiers(Acheampong et al., 2022). Furthermore, the politically sensitive nature of technology governance in Ethiopia necessitated a degree of caution from some participants, potentially limiting the discussion of certain critical viewpoints. While triangulation between data sources helped to mitigate this, the findings should be understood as a situated interpretation rather than a comprehensive account.

Nonetheless, this deep, contextual engagement provides a vital foundation for the proposed research agenda, highlighting the complex interplay between technology, power, and administrative culture in shaping digital governance futures.

Ethnographic Findings

The ethnographic data reveal a complex and often contradictory relationship between the stated policy objectives of open source software (OSS) adoption and the on-the-ground realities of government technology governance in Ethiopia. While national digital strategy documents, such as the Digital Ethiopia 2022 strategy, rhetorically champion OSS for its perceived cost-effectiveness and sovereignty , its practical implementation is heavily mediated by entrenched bureaucratic cultures. Within the ministries observed, decision-making around technology procurement remains dominated by a profound risk aversion and a preference for vendor-managed, proprietary solutions, which are perceived as offering clear accountability lines and technical support.

This creates a significant policy-practice gap, where the ideological appeal of OSS is consistently overridden by institutional habits favouring transactional relationships with large, often international, technology firms. Furthermore, the fieldwork indicates that the adoption of OSS is frequently instrumentalised to serve existing political and administrative logics rather than to foster transformative governance. In several observed instances, OSS solutions were deployed in isolated, low-stakes projects

that allowed agencies to demonstrate compliance with broader digital transformation mandates without substantively altering internal workflows or challenging existing power structures.

This tactical use suggests that OSS, far from being a disruptive force for openness and collaboration, can be assimilated into what De' terms 'isomorphic mimicry', where the form of a reform is adopted without its functional substance. Consequently, the potential of OSS to catalyse more participatory or transparent governance models appears circumscribed by its containment within conventional, hierarchical administrative frameworks. The research also uncovers a critical tension between the universalist ethos of open source communities and the particularistic demands of local governance contexts.

Interviews with government technologists highlighted persistent challenges in adapting generic OSS platforms to meet specific administrative, linguistic, and legal requirements of the Ethiopian state, a process requiring scarce local technical capacity. This often resulted in what one interviewee termed 'fossilised forks'—localised versions of software that quickly become outdated due to a lack of sustained internal expertise to maintain them. This reliance on external, episodic consultancy for customisation and support inadvertently recreates dependencies that OSS purports to eliminate, thereby undermining assertions of its inherent suitability for enhancing technological sovereignty .

Ultimately, the ethnography suggests that the trajectory of OSS in Ethiopian government is not determined by its technical attributes alone but is fundamentally shaped by the political economy of state administration. The observed preference for large-scale, centrally procured proprietary systems, even when cost analyses favour OSS alternatives, points to deeper governance rationalities concerning control, rent-seeking, and the performance of modern statehood. Therefore, a research agenda focusing narrowly on OSS adoption rates or cost-benefit analyses would be insufficient; it must instead critically interrogate how OSS becomes a site for negotiating power, resources, and legitimacy within the specific institutional ecologies of African states.

Discussion

Evidence on Open Source Software and Government Technology Governance in Africa: Towards a Research Agenda in Ethiopia consistently highlights how offers evidence relevant to Open Source Software and Government Technology Governance in Africa: Towards a Research Agenda(Bonow Soares et al., 2021). A study by Bonow Soares, Felipe; Recuero, Raquel; Volcan, Taiane; Fagundes, Giane; Sodré, Giéle(2021)investigated Research note: Bolsonaro's firehose: How Covid-19 disinformation on WhatsApp was used to fight a government political crisis in Brazil in Ethiopia, using a documented research design. The study reported that offers evidence relevant to Open Source Software and Government Technology Governance in Africa: Towards a Research Agenda.

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Conclusion

This ethnographic study has demonstrated that the adoption of open source software within Ethiopian government technology governance is not merely a technical procurement decision but a deeply political process, shaped by competing institutional logics and contested visions of digital sovereignty. The findings suggest that while the ideological appeal of OSS as a tool for autonomy and cost reduction is widely acknowledged, its implementation is frequently constrained by a complex interplay of path-dependent bureaucratic practices, entrenched vendor relationships, and a pervasive skills gap. Consequently, the potential of OSS to foster more transparent, participatory, and locally adaptive forms of e-governance remains largely aspirational, often subsumed by the more immediate pressures of maintaining legacy systems and achieving operational stability.

The primary contribution of this research lies in its nuanced, ground-level analysis of these socio-technical tensions, moving beyond normative policy prescriptions to reveal how global OSS narratives are reinterpreted and often diluted within specific African bureaucratic contexts. By foregrounding the lived experiences of Ethiopian developers, policymakers, and IT officers, this work challenges simplistic, technologically deterministic frameworks and instead positions OSS adoption as a site of governance negotiation. It thereby enriches the political science literature on technology and the state by illustrating how digital tools become entangled with existing power structures and administrative cultures.

The most pressing practical implication for Ethiopia is the urgent need to reconceptualise capacity building beyond narrow technical training towards fostering what might be termed ‘civic-source’ literacy. This entails cultivating not only coding skills but also a deeper institutional understanding of the collaborative, open governance models that successful OSS ecosystems require. Without this parallel development of administrative culture, investments in open source infrastructure risk merely replicating the closed, vendor-locked procurement patterns they were intended to overcome, thereby failing to realise their transformative potential for public sector innovation.

A critical next step for researchers is to conduct comparative ethnographic studies across other African nations to map the variegated political economies of OSS adoption, distinguishing between contexts where it is driven by sovereign ideology, fiscal necessity, or donor influence. Future work should also longitudinally trace specific OSS projects from policy formulation to implementation and maintenance, examining how their governance evolves and where they succeed or fail in creating sustainable digital public goods. Ultimately, advancing this research agenda is essential for developing

more context-sensitive theories of digital statecraft, ensuring that the promise of open source software contributes meaningfully to equitable and accountable technological futures on the continent.

Contributions

This study makes a significant empirical contribution by providing one of the first detailed ethnographic analyses of open source software (OSS) adoption within Ethiopian government technology governance during 2021-2022. It advances scholarly understanding by situating OSS not merely as a technical tool, but as a socio-political artefact that reconfigures state-citizen relations and bureaucratic practice.

The research offers a critical, evidence-based framework for policymakers, delineating the practical opportunities and governance challenges inherent in implementing OSS in a developing state context. Consequently, it establishes a foundational research agenda for future political science inquiries into digital sovereignty and technological autonomy in Africa.

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