

Digital Governance and Algorithmic Justice in Post-Conflict Sri Lanka: Technological Implications for Ethnic and Land Dispute Resolution

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Abstract

Sri Lanka's post-conflict governance landscape, particularly in the Northern and Eastern Provinces, remains deeply influenced by unresolved consequences of nearly three decades of civil war. Despite the cessation of armed hostilities in 2009, persistent ethnic tensions, contested land ownership, prolonged displacement, and uneven development outcomes continue to shape post-war administration. Land disputes remain among the most destabilizing challenges, disproportionately affecting Tamil and Muslim communities that experienced displacement, secondary occupation of land, loss of documentation, and militarized land administration during and after the conflict. This study critically examines the potential of digital governance and algorithmic justice to improve ethnic and land dispute resolution in post-conflict Sri Lanka. Using a mixed-methods design that integrates qualitative, spatial, and institutional analyses, the study draws on interviews, surveys, government land records, policy documents, administrative case files, GIS mapping, satellite imagery, and algorithmic decision-support tools. The findings indicate that algorithmic and digital governance mechanisms can improve transparency, consistency, procedural fairness, and administrative efficiency when implemented as hybrid systems supported by human oversight, participatory consultation, legal safeguards, and continuous bias monitoring. The study concludes that algorithmic justice is not a substitute for human judgment, but a strategic instrument for strengthening institutional capacity, reducing procedural arbitrariness, and supporting post-conflict reconciliation and social cohesion.

Keywords: Algorithmic Justice; Digital Governance; Land Dispute Resolution; Post-Conflict Sri Lanka

Background

Sri Lanka's post-conflict governance landscape, particularly in the Northern and Eastern Provinces, remains deeply influenced by the unresolved consequences of nearly three decades of civil war. Despite the cessation of armed hostilities in 2009, the post-war period continues to be shaped by persistent ethnic tensions, contested land ownership, prolonged displacement, and uneven development outcomes. Land disputes constitute one of the most destabilizing challenges, disproportionately affecting Tamil and Muslim communities, who experienced displacement, secondary occupation of land, loss of documentation, and militarized land administra-

tion during and after the conflict.

Conventional administrative and judicial mechanisms for land dispute resolution have been insufficient in addressing these challenges. Delays in adjudication, bureaucratic opacity, politicization of decision-making, and perceived ethnic bias have undermined public confidence in state institutions. In many cases, overlapping legal claims, fragmented administration, and outdated land records result in prolonged uncertainty for affected populations. These governance deficiencies are compounded by majority–minority dynamics, religious sensitivities, and the fragile nature of post-conflict reconciliation.

In this context, digital governance reforms and algorithmic decision-making systems have emerged



globally as potential instruments for enhancing transparency, consistency, and administrative efficiency. Algorithmic justice, understood as the application of computational tools to support fair, impartial, and accountable public decision-making, has attracted growing attention in domains such as welfare distribution, policing, and judicial administration. However, its applicability in post-conflict, ethnically plural societies remains underexplored. This study situates algorithmic justice within Sri Lanka's post-conflict land governance framework, examining its potential role in addressing ethnic and land-related disputes while accounting for socio-political sensitivities.

Objectives

The primary objective of this study is to critically examine the potential of algorithmic justice and digital governance mechanisms to improve land and ethnic dispute resolution in post-conflict Sri Lanka. Specifically, the study aims to:

1. Assess the structural limitations of existing administrative and judicial approaches to land dispute resolution in the Northern and Eastern Provinces.
2. Examine how algorithmic tools, ranging from decision-support systems to hybrid human–algorithm models, can contribute to transparency, consistency, and efficiency in post-conflict land administration.
3. Evaluate the perceived fairness, legitimacy, and acceptability of algorithmic interventions among affected communities and administrative officials.
4. Identify the risks, ethical concerns, and implementation challenges associated with deploying algorithmic decision-making in ethnically sensitive, post-conflict contexts.
5. Propose governance and policy frameworks that integrate algorithmic systems with human oversight, legal safeguards, and participatory mechanisms.

Methodology

The study employs a mixed-methods research design integrating qualitative, spatial, and institutional analyses. Semi-structured interviews were conducted with displaced individuals, land claimants, community leaders, and local administrative officials to explore experiences with land disputes, perceptions of administrative fairness, and attitudes toward algorithmic governance. Survey questionnaires were administered to local governance staff to understand institutional capacity, decision-making practices, and openness to digital tools.

Secondary data were drawn from government land records, policy documents, and administrative case files to identify procedural bottlenecks and recurring dispute patterns. Geospatial technologies, including GIS mapping and satellite imagery, were employed to demarcate disputed land parcels, reconstruct historical settlement patterns, and detect overlaps between state, military, and civilian land claims. Algorithmic tools were applied to structure case management, identify recurring dispute patterns, and assist in prioritizing urgent cases, functioning primarily as decision-support mechanisms rather than autonomous decision-makers.

Results

The study reveals that algorithmic and digital governance tools can offer meaningful improvements in post-conflict land administration, particularly in terms of transparency, consistency, and procedural fairness, although their impact is mediated by social, political, and technological factors.

Qualitative Findings

Interviews with affected communities highlighted recurring themes: frustration with lengthy adjudication processes, perception of ethnic bias in administrative decisions, and distrust of bureaucratic institutions. Respondents consistently noted that visual and evidence-based tools, such as GIS maps showing disputed boundaries, enhanced the perceived legitimacy of decisions. Community leaders emphasized the importance

of participatory consultation and human mediation in conjunction with any algorithmic support.

Institutional Perspectives

Administrative officials reported that algorithmic decision-support systems improved efficiency by helping organize case files, identify recurring dispute patterns, and highlight cases requiring urgent attention. However, they stressed the need for human oversight to contextualize decisions, particularly in cases involving overlapping legal, historical, and customary claims. Officials noted that automated outputs are valuable as guidance tools but are not substitutes for adjudicative judgment or mediation.

GIS and Algorithmic Observations

Geospatial analyses facilitated clearer identification of disputed territories, reconstruction of historical settlement patterns, and visualization of overlapping claims. Algorithmic triaging of cases enabled structured prioritization, assisting administrators in allocating resources and attention more systematically. While quantitative reduction in dispute resolution time was not measured, both officials and community members reported a perception of greater efficiency and clarity in the handling of disputes supported by these tools.

Perceptions of Fairness

Across all stakeholder groups, algorithmic interventions were perceived as more impartial than traditional processes, particularly where human decision-making had historically been influenced by ethnic or political considerations. At the same time, participants cautioned against rigid enforcement of algorithmic recommendations, emphasizing the need for flexibility, mediation, and context-sensitive judgment.

Implementation Challenges

Key risks include potential reproduction of historical biases embedded in records, limited digital literacy among displaced populations, uneven access to technology, and the possibility of resistance or mistrust if algorithmic recommendations are perceived as imposed externally without consultation. Ethical and legal safeguards,

human oversight, and participatory engagement were highlighted as essential to mitigate these risks.

Discussion and Implications

The findings suggest that hybrid models combining algorithmic decision-support with human mediation and participatory consultation offer the most promising pathway for post-conflict land governance. Algorithmic tools can reduce administrative arbitrariness, systematize case prioritization, and increase transparency, but their legitimacy depends on context-aware implementation, sensitivity to historical grievances, and alignment with local social norms.

The study underscores that algorithmic justice is not a substitute for human judgment. Instead, it functions as a strategic instrument to support informed decision-making, improve efficiency, and build trust in post-conflict governance systems. Effective integration requires continuous stakeholder engagement, capacity-building, bias monitoring, and robust legal and ethical frameworks.

Conclusion

Algorithmic and digital governance frameworks hold considerable promise for enhancing fairness, transparency, and efficiency in land dispute resolution in post-conflict Sri Lanka. By integrating computational tools with human oversight, participatory consultation, and legal safeguards, policymakers can strengthen institutional capacity, reduce procedural arbitrariness, and contribute to post-conflict reconciliation and social cohesion. From a policy perspective, the study recommends phased implementation of algorithmic tools, participatory engagement with affected communities, capacity-building initiatives for administrators and users, continuous monitoring of historical and systemic biases, and establishment of robust data protection and ethical guidelines. When applied thoughtfully, algorithmic justice represents a strategic innovation capable of addressing entrenched governance challenges while supporting sustainable peace in ethnically and politically complex post-conflict settings.