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Inclusive Urban Governance in the Digital Era: Advancing Participatory Planning and Policy Innovation in Malaysian Cities

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ABSTRACT

The evolving urban landscape in Malaysia demands governance models that are inclusive, participatory and digitally responsive. This paper investigates how digital tools are being integrated into urban planning to enhance public participation and policy innovation in Malaysian cities, with comparative insights from Penang and Putrajaya. The study addresses a critical gap in understanding how smart governance intersects with social inclusion in local development processes. Grounded in Smart Governance Theory and the Social Inclusion Model, this research employs a mixed-methods approach, integrating semi-structured interviews with urban planners and community leaders (n=12), policy content analysis and survey responses from 150 residents across both cities. The study is guided by three research questions: (1) How do digital platforms facilitate community engagement in urban governance? (2) What institutional barriers hinder inclusive planning? (3) What policy innovations emerge from citizen-centric digital integration? Findings highlight that digital tools such as participatory GIS, e-planning dashboards and feedback apps enhance transparency and inclusivity, but their effectiveness is constrained by digital literacy gaps, fragmented data ecosystems and limited inter-agency coordination. The study develops an Integrated Framework for Inclusive Smart Governance, which outlines strategic pathways for aligning community engagement technologies with local planning policy and institutional reform. This paper contributes a novel theoretical and practical perspective by linking digital innovation with inclusive governance in a Southeast Asian context. Policy implications include actionable recommendations for local authorities to embed co-creation principles in planning processes, in line with SDG 11: Sustainable Cities and Communities and Malaysia MADANI policy aspirations. The findings are relevant to policymakers, urban planners and international development actors seeking to foster more equitable and participatory urban futures.

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1. Introduction

Urbanization in Malaysia is progressing rapidly, reshaping the socio-political, economic and spatial dynamics of its cities. This transformation has brought forth both opportunities and complex governance challenges, particularly in balancing economic growth with inclusive urban development. Traditional top-down planning models are increasingly insufficient to address the nuanced needs of diverse urban populations, especially marginalized communities who are often excluded from formal decision-making processes.

In response to these challenges, Malaysia has introduced progressive policy initiatives such as the Malaysia Smart City Framework and the Malaysia MADANI vision, which emphasize sustainable, people-centred urban development. These national blueprints aim to leverage technology to enhance service delivery, improve liveability and promote citizen engagement. Yet, while digital transformation is central to these initiatives, there is a risk that technology-driven governance may deepen existing inequalities if issues of digital literacy, accessibility and inclusive participation are not adequately addressed.

This study investigates the intersection of digital governance, participatory planning and social inclusion in Malaysian cities. Specifically, it explores how digital platforms are being utilized to engage citizens in urban planning processes and how these tools can support innovative policy responses. By focusing on two contrasting urban contexts—Penang (a dynamic, decentralized city-region) and Putrajaya (a centrally administered federal territory)—the paper offers comparative insights into how digital tools function within different governance ecosystems. The originality of this study lies in its localized analysis of inclusive urban governance through a digital lens, culminating in the proposal of an Integrated Inclusive Smart Governance Framework. This framework aligns with Malaysia's urban policy aspirations and contributes to theoretical advancements in smart governance and participatory urbanism within Southeast Asia.

2. Literature Review

Over the past two decades, urban governance has undergone a paradigm shift from hierarchical, state-led models to more participatory, data-informed frameworks that leverage digital technologies [1]. This transition reflects the global recognition that complex urban challenges require multi-actor collaboration, transparency and inclusivity — particularly in the face of rapid urbanization and digital transformation.

Smart Governance Theory has emerged as a central lens to understand this shift, emphasizing principles such as efficiency, transparency, accountability, responsiveness and data-driven decision-making [2]. This theory posits that digital tools can enhance governance by improving service delivery and enabling citizen participation in planning and policy processes. In parallel, the Social Inclusion Model highlights the need for governance systems to proactively address disparities in access, voice and representation, particularly among marginalized groups [3]. These two frameworks offer a complementary basis for analysing inclusive digital governance.

Technological innovations such as participatory Geographic Information Systems (pGIS), e-planning dashboards, crowdsourced feedback platforms and open data portals have increasingly been deployed to enhance citizen engagement [4,5]. These tools are particularly useful in enabling real-time interaction, localized planning input and community-driven monitoring of urban services. However, their effectiveness is not universal. Studies across urban Southeast Asia indicate that their impact is often curtailed by fragmented digital infrastructure, limited digital literacy and institutional inertia [6,7].

In the Malaysian context, recent studies have explored smart city initiatives and urban governance reforms, but few have critically examined how digital tools interact with participatory planning across governance scales. For instance, while local authorities have begun implementing digital dashboards and engagement apps, there is little empirical research on whether these tools genuinely foster co-creation or merely enhance communication. Moreover, there remains a lack of integrated, context-sensitive frameworks to guide inclusive digital engagement in local planning.

This study addresses these gaps by applying Smart Governance Theory and the Social Inclusion Model to two urban case studies — Penang and Putrajaya — and proposes a scalable Integrated Inclusive Smart Governance Framework tailored to Malaysia’s evolving policy ecosystem. In doing so, it contributes both empirical evidence and theoretical advancement to the discourse on participatory digital urbanism in Southeast Asia.

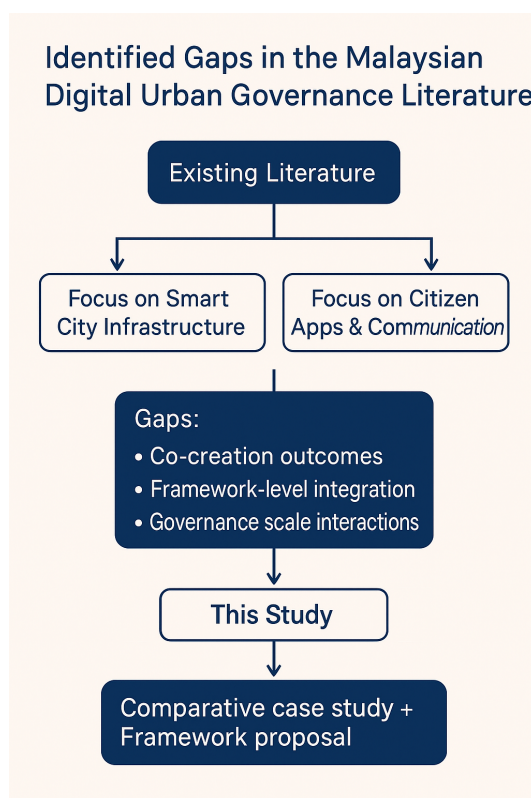


Fig. 1. Identified gaps in the Malaysian digital urban governance literature

This diagram illustrates the limitations in existing studies on Malaysia’s digital urban governance, which predominantly focus on smart city infrastructure and citizen-facing communication tools. It highlights critical research gaps, including the lack of empirical studies on co-creation outcomes, framework-level integration and governance scale interactions. The present study addresses these gaps through a comparative case analysis and proposes an integrated governance framework.

3. Methodology

This study adopted a mixed-methods research design, combining qualitative and quantitative approaches to provide a comprehensive understanding of inclusive urban governance practices in the digital era. The rationale for this design lies in the complex and multi-scalar nature of the research problem, which spans institutional behaviour, community experience and policy structure. By

triangulating multiple data sources, the study enhances validity, contextual richness and analytical depth.

3.1 Data Collection Methods

The research involved three primary data collection strategies:

- i. **Semi-Structured Interviews:** A total of 12 key informants were selected using purposive sampling, targeting individuals with professional or experiential relevance to urban governance and digital planning tools. These included urban planners, local government officials, community leaders and representatives from smart city units in Penang and Putrajaya. Interview questions focused on perceived effectiveness, barriers to implementation and innovation in digital participatory tools. Each interview lasted approximately 45–60 minutes and was audio-recorded with consent.
- ii. **Resident Surveys:** A structured survey was distributed to 150 residents (75 from each city) via digital platforms and community organizations. The survey instrument included Likert-scale items measuring:
 - Familiarity with digital urban governance platforms
 - Perceived inclusivity and transparency in planning processes
 - Satisfaction with engagement opportunities and feedback mechanisms
 - The sample was stratified by age, gender and digital literacy to ensure representativeness.
- iii. **Policy Document Analysis:** A qualitative review of 15 policy documents was conducted, including local structure plans, the Malaysia Smart City Framework, city council digital strategies and relevant reports on community engagement. Documents were examined for alignment between national objectives and local implementation of participatory digital tools.

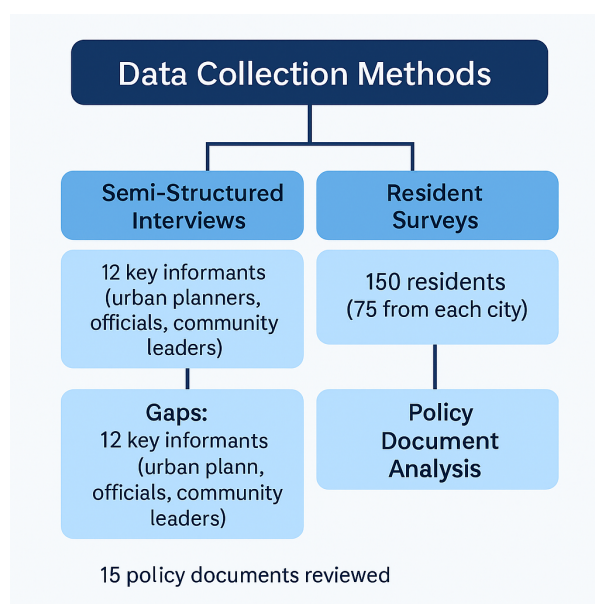


Fig. 2. Data collection methods in the study

These visual outlines the three primary data collection strategies used:

- i. semi-structured interviews with 12 key stakeholders from Penang and Putrajaya
- ii. structured surveys administered to 150 residents measuring perceptions of digital governance tools
- iii. policy document analysis of 15 key national and local planning documents. Together, these methods provided a triangulated dataset for understanding inclusive digital urban governance in Malaysia.

3.2 Data Analysis

- i. Quantitative Data: Survey data were analysed using SPSS (Version 28). Descriptive statistics were used to profile respondent characteristics and tool usage trends. Multiple regression analysis was conducted to explore relationships between digital participation and perceived inclusivity in governance outcomes.
- ii. Qualitative Data: Interview transcripts and policy documents were coded thematically using NVivo 14, following an inductive approach. Codes were organized into themes such as “institutional coordination,” “barriers to inclusion,” and “innovation in co-creation.” Cross-case comparisons were made between Penang and Putrajaya to identify divergences in governance structures.

3.3 Ethical Considerations

The research adhered strictly to ethical standards. All participants received an informed consent form detailing the study’s aims, confidentiality assurances and the voluntary nature of participation. Data were anonymized and stored securely. Ethical clearance was obtained from the institutional research ethics committee at Universiti Utara Malaysia.

4. Findings and Discussion

This section synthesizes insights from the mixed-methods data in alignment with the study’s three core research questions. The findings reveal promising digital developments in Malaysian urban governance, but also expose deep structural barriers that hinder inclusive participation.

4.1 Digital Tools and Community Engagement

Digital tools have expanded participation opportunities in both Penang and Putrajaya. Platforms such as the “MBPP e-Planner” and “Putrajaya Feedback App” allow residents to provide input on zoning changes, land use concerns and traffic management. These platforms utilize interactive maps, push notifications and multilingual interfaces to enhance usability.

Survey data indicate that 68% of respondents had used at least one of these tools to engage in planning-related matters, with younger respondents (aged 18–35) showing the highest usage rates. Respondents noted improvements in access to information, but fewer reported satisfaction with actual influence on planning decisions [8].

“I can see what’s going on in my area, but I don’t think my feedback changes anything,” — Putrajaya resident (Interviewee #7)

These findings highlight that while digitization has improved visibility, it has not always translated into co-decision-making. The role of digital platforms remains mostly consultative rather than collaborative.

4.2 Institutional Barriers

Despite the rollout of digital tools, multiple institutional constraints persist:

- i. Limited cross-agency data sharing, leading to redundant or inconsistent planning inputs.
- ii. Poor integration of public feedback into final policy documents, with no formal mechanism to close the loop.
- iii. Low digital literacy among senior citizens and B40 groups, particularly in low-income flats and peri-urban areas.

Interview participants emphasized that digital planning tools are often treated as information dissemination platforms rather than as engines of co-creation.

“We use the platforms to announce policies, not build them together with the public,” — Penang urban planner (Interviewee #3)

These challenges point to a lack of institutional commitment to participatory governance principles, revealing a disconnect between digital innovation and governance reform.

4.3 Policy Innovations and Local Practice

Nonetheless, both cities have demonstrated promising local innovations. Penang has integrated real-time pedestrian data dashboards into its urban mobility plans, allowing dynamic redesign of walkable zones. Putrajaya piloted “Digital Townhall” sessions via Zoom and Facebook Live, enabling more inclusive participation across income and age groups.

However, these initiatives remain pilot-bound or department-specific, facing difficulties in scaling due to:

- i. Fragmented digital infrastructure
- ii. Inadequate budgeting for long-term maintenance
- iii. Absence of legal or KPI incentives for inter-agency collaboration

4.4 Proposed Framework: Integrated Inclusive Smart Governance Model

The framework addresses the systemic disconnect between digital participation and meaningful policy integration. It proposes a three-pillar model:

- i. Technological Infrastructure
 - Establish interoperable systems across agencies
 - Promote open-data standards and APIs for community use
 - Ensure mobile-first platforms for high B40 accessibility
- ii. Community Co-Creation Mechanisms
 - Institutionalize digital townhalls, not just public announcements

- Implement participatory budgeting tools with traceable feedback loops
- Create community-data partnerships with NGOs and local universities
- iii. Institutional Alignment
 - Embed participation KPIs into planning officer appraisals
 - Develop legal mandates for feedback-to-policy traceability
 - Establish Digital Engagement Councils across all local authorities

This model is designed for scalability and flexibility, enabling adoption across Malaysian municipalities with diverse capacities and socio-technical conditions. It provides a strategic framework that aligns digital infrastructure, community participation mechanisms and institutional reforms to advance inclusive and responsive governance. Critically, the framework supports the realization of SDG 11: Sustainable Cities and Communities and embodies the principles of Malaysia MADANI, emphasizing equity, resilience and shared responsibility in urban development.

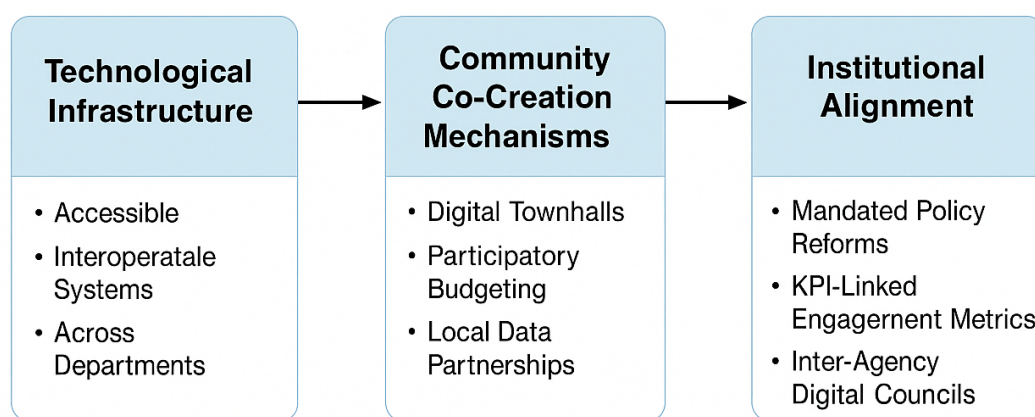


Fig. 3. Integrated inclusive smart governance framework

A three-pillar model linking technological infrastructure, co-creation mechanisms and institutional alignment to support inclusive digital urban governance in Malaysia.

5. Policy Implications and Recommendations

The findings of this study underscore the potential of digital tools to transform urban governance in Malaysia—but only when accompanied by institutional reforms, inclusive design and community empowerment. The proposed Integrated Inclusive Smart Governance Framework offers a strategic pathway to embed participatory principles into digital governance ecosystems. To operationalize this framework and realize its transformative potential, the following policy actions are recommended:

- i. Establish Targeted Digital Literacy Programs: Government agencies and local councils should collaborate with civil society and educational institutions to design community-based digital literacy programs, especially for B40 populations, senior citizens and youth in underserved areas. Training modules should focus on navigating participatory platforms (e.g., e-planners, feedback apps) and understanding urban planning processes.

Policy Justification: Without digital capacity, participation tools risk reinforcing exclusion.

- ii. Mandate Citizen Feedback Integration in Urban Planning KPIs: Local authorities should institutionalize the use of citizen-generated data by incorporating participatory performance indicators into local planning frameworks. For instance, the percentage of community proposals integrated into local plans or the response time to digital feedback could serve as KPI metrics.

Policy Justification: Embedding feedback loops in performance indicators ensures accountability and co-decision-making.

- iii. Develop Centralized Open-Data Platforms: To support evidence-based planning and public trust, a centralized open-data dashboard should be developed, integrating datasets from multiple city departments. This platform should be accessible to the public, researchers and civil society to encourage transparency and collaboration.

Policy Justification: Fragmented data ecosystems currently hinder inter-agency coordination and public insight.

- iv. Incentivize Local Innovation Labs for Co-Creation: The federal government should provide seed funding and policy support for establishing urban innovation labs within local councils. These labs would act as testbeds for digital co-creation tools (e.g., participatory GIS, budgeting simulators) and pilot programs tailored to local contexts.

Policy Justification: Institutionalizing innovation creates space for iterative design and bottom-up governance.

Aligning these policy actions with Sustainable Development Goal 11 (Sustainable Cities and Communities) and the values of Malaysia MADANI—including resilience, equity and community well-being—will help foster digital urban governance that is not only efficient but also inclusive and people-centred.

6. Conclusion

This study affirms the transformative potential of digital platforms in advancing inclusive urban governance in Malaysia. By examining how participatory tools such as e-planners, feedback applications and digital townhalls are being integrated into planning processes in Penang and Putrajaya, the research highlights both progress and persistent limitations in achieving citizen-centred governance.

Through a mixed-methods approach, the study provides empirical insights into how digital engagement is experienced by citizens, perceived by planners and constrained by institutional dynamics. The findings reveal that while technology has improved access to information and visibility of planning processes, it remains underutilized as a mechanism for co-creation and shared decision-making.

The original contribution of this study lies in the development of the Integrated Inclusive Smart Governance Framework—a scalable model that aligns technological infrastructure, community participation mechanisms and institutional reforms. Grounded in Smart Governance Theory and the Social Inclusion Model, the framework offers a roadmap for embedding digital inclusion into local

planning ecosystems, adaptable not only to Malaysian cities but also across the Southeast Asian region.

As Malaysia accelerates its Smart City and Malaysia MADANI agenda, ensuring that digital transformation is equitable, participatory and resilient is essential. Policymakers and urban leaders must prioritize institutional innovation, citizen empowerment and cross-sector collaboration. Ultimately, inclusive digital governance is not only a matter of technological deployment but a moral and developmental imperative—one that determines the sustainability, legitimacy and justice of future urban landscapes.

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