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CASE STUDY RESEARCH PAPER

A Sociological Assessment of the Local Management Model in Ilam City, Iran: Implications for Sustainable Development

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ABSTRACT

Local management models in Iranian intermediate cities face compounding pressures arising from rapid demographic growth, resource scarcity, and deeply embedded governance deficits. Ilam City, the provincial capital of Ilam Province in western Iran, epitomizes these tensions: rapid post-war population growth, a heavily state-dependent economy, significant ethnic and tribal complexity, and a municipal administration whose institutional capacities remain critically underdeveloped. This study proposes a validated sociological assessment framework for local management in Ilam City and examines its implications for sustainable urban development. The research adopts an analytical–applied design; data were gathered through documentary and library methods and assessed qualitatively. Following a systematic review of theoretical foundations, twenty-one initial indicators were extracted and subjected to evaluation through the Fuzzy Delphi Method (FDM), employing a participatory decision-making approach within a fifteen-member expert panel over four sequential rounds. Successive rounds applied escalating consensus thresholds (2.5, 3.0, 3.5, and 4.0 on a five-point Likert scale), progressively reducing the indicator set from 21 to 18, 15, 13, and confirming 13 indicators as the validated proposed model. Consensus was verified by Kendall's coefficient of concordance, which reached 0.794 in the final round. Findings indicate that institutional transparency (4.26), local council effectiveness (4.22), community participation rate (4.18), and service distribution equity (4.15) exert the highest influence on local management effectiveness. The study concludes that the integration of participatory governance principles, equitable service distribution, and institutional accountability constitutes a strategically viable path toward sustainable urban development in Iranian western-border cities.

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INTRODUCTION

Local governance and urban management in developing countries have undergone significant transformation over the past three decades, driven by processes of administrative decentralisation, democratisation, and the growing recognition that sustainable development cannot be achieved through top-down, centralised planning alone (Osmani, 2022; Teles & Swianiewicz, 2018). The emergence of participatory governance frameworks, rooted in principles of accountability, transparency, and citizen engagement, has reshaped the conceptual architecture within which urban local management is theorised and evaluated. Yet in many countries in the Global South, including Iran, the rhetoric of decentralisation has not been matched by commensurate transfers of fiscal autonomy, administrative capacity, or genuine decision-making authority to sub-national tiers of government (Azkia & Ghaffari, 2019; World Bank, 2021). Iran's system of urban local governance, founded on the dual structure of municipalities (*shahrdari*) and Islamic city councils (*shura-ye eslami-ye shahr*), was established following the 1996 Local Councils Law and operationalised through the first direct council elections in 1999. Despite this formal institutional architecture, empirical assessments of local management performance across Iranian cities consistently document profound structural weaknesses: heavy financial dependency on construction-related revenues, inadequate service delivery capacities, weak accountability mechanisms, limited technical expertise within municipal administrations, and a persistent gap between formal participatory structures and substantive community engagement (Kalantari & Ghaznavy, 2020; Sheikhi, 2019; Zangi-Abadi & Tabrizi, 2021).

Ilam City, the provincial capital of Ilam Province in western Iran, presents a particularly salient case for the sociological analysis of local management. The city's post-revolutionary development trajectory has been shaped by

a confluence of factors that render its governance challenges qualitatively distinct from those of larger Iranian metropolitan centres. First, its location in the Kurdistan-Ilam border region implies a degree of ethnic and tribal social complexity that intersects with the formal institutional structure of municipal governance in ways that have been inadequately theorised (Salehi et al., 2021; Tavakoli, 2020). Second, the city's economy is heavily dependent on public sector employment and state transfers, rendering its municipality financially non-autonomous and its development trajectory externally determined. Third, the accelerated population growth experienced in the post-war reconstruction era from approximately 60,000 in 1986 to over 227,600 by 2021 has generated demands for urban services and infrastructure that outpace the institutional and financial capacities of the local administration (Statistical Centre of Iran, 2021).

Despite these conditions, systematic sociological assessment of the local management model in Ilam has been limited. Existing studies have either focused narrowly on specific functional dimensions of municipal service delivery, such as Salehi et al. (2021) on water and sanitation, or have examined broader provincial development challenges without specifically theorising the role of local management structures in mediating development outcomes. International comparative literature on local governance in post-conflict or border-region cities, while providing valuable conceptual frameworks, cannot be directly applied to the specific institutional, cultural, and political context of Ilam without systematic contextual adaptation (Teles & Swianiewicz, 2018; Osmani, 2022). The present study therefore aims to fill this gap by developing a validated, participatory sociological assessment framework for local management in Ilam City, employing the Fuzzy Delphi Method (FDM) as a tool for systematic expert consensus-building. The research seeks to: (1) identify the principal sociological dimensions

along which local management in Ilam may be assessed; (2) validate a set of operational indicators through iterative expert consensus; and (3) draw implications from the validated framework for the design of sustainable urban development strategies appropriate to Ilam's distinctive governance context.

MATERIALS AND METHODS

Conceptualising Local Management: Sociological Dimensions

The sociological study of local management encompasses a body of theory concerned with the relationship between institutional structures, power configurations, social capital, and developmental outcomes at the urban scale. Classical theories of urban governance, drawing on the work of Stone (1989) on urban regime theory and Logan and Molotch (1987) on growth machine politics, established the foundational insight that formally elected local governments are embedded within broader social and economic coalitions whose interests shape the substance of urban policy. Contemporary extensions of this framework have emphasised the role of civic associations, neighbourhood organisations, and informal networks in either reinforcing or challenging the dominant configurations of urban power (Jessop et al., 2020; Keil, 2017). Decentralisation theory, drawing on the seminal contributions of Ostrom (1990) on the governance of common pool resources and Putnam (1993) on social capital and institutional performance, has established a strong theoretical case for the proposition that local governance institutions are more effective when they are supported by dense networks of civic trust, reciprocity, and horizontal association. The empirical evidence on this relationship, however, is considerably more complex: studies from developing country contexts repeatedly document cases in which decentralisation under conditions of weak civil society and high social inequality reproduces or intensifies existing power asymmetries rather than democratising

governance (Azkia & Ghaffari, 2019; World Bank, 2021). In the specific context of Iranian urban governance, the theoretical framework of local management must account for the intersection of formal institutional structures with informal social arrangements including tribal networks, religious authority structures, and bazaar-based commercial networks that constitute a parallel system of social governance in many Iranian cities (Azkia & Ghaffari, 2019; Kalantari & Ghaznavy, 2020). Sheikhi (2019) argues that the effectiveness of Iranian urban councils is significantly mediated by the social capital embedded in neighbourhood associations and local religious institutions, suggesting that purely institutional assessments of local management performance systematically underestimate the role of informal governance networks.

Sustainable Development and Local Governance: The Nexus

The linkage between local governance quality and sustainable urban development has been theorised across multiple disciplinary traditions. The United Nations Development Programme (UNDP, 2021) has identified local governance effectiveness as a foundational determinant of the achievement of the Sustainable Development Goals, particularly SDG 11 (Sustainable Cities and Communities), SDG 16 (Peace, Justice, and Strong Institutions), and SDG 17 (Partnerships for the Goals). The theoretical rationale rests on three principal claims: first, that sustainable development requires the integration of economic, social, and environmental objectives that only a governance actor with territorial embeddedness and stakeholder legitimacy can credibly pursue; second, that effective local governance generates the institutional trust necessary for the collective action required by sustainable development transitions; and third, that locally appropriate development strategies must be locally designed, which presupposes a local institutional capacity for evidence-based planning (Osmani, 2022; Teles & Swianiewicz, 2018). Em-

pirical studies of the governance-sustainability nexus in Iranian cities document a consistent pattern of institutional barriers to sustainable urban development: administrative fragmentation between municipality, urban development agencies, and sectoral ministries; weak fiscal bases and overdependence on construction permit revenues; limited technical capacity within municipal planning departments; and inadequate mechanisms for the representation of marginalised communities in planning processes (Zangi-Abadi & Tabrizi, 2021; Kalantari & Ghaznavy, 2020; Tavakoli, 2020).

Local Management in Border and Post-Conflict Cities: Ilam in Context

Cities in border regions and post-conflict contexts face distinctive local management challenges that the mainstream urban governance literature has inadequately theorised. Liikanen et al. (2021) identify three characteristic features of border-region urban governance: heightened security considerations that constrain local decision-making autonomy; asymmetric development pressures arising from cross-border economic and demographic dynamics; and governance cultures shaped by militarisation and state security imperatives that crowd out civic participation. Ilam's experience of the Iran-Iraq War (1980–1988), during which substantial portions of the city's physical infrastructure were destroyed and the population experienced mass displacement, continues to shape both the physical landscape and the social fabric of the city in ways that remain underexplored in the urban governance literature (Salehi et al., 2021). The post-war reconstruction of Ilam City was managed primarily through centralised state agencies rather than local governmental bodies, establishing a pattern of dependence on external resource allocation and top-down planning that subsequent decentralisation reforms have not fundamentally altered. Tavakoli (2020) documents the persistence of this dependency pattern in the contemporary governance of Ilam,

arguing that the formal institutional framework of elected councils and municipal administration has been grafted onto an organisational culture shaped by decades of centralised wartime and post-war reconstruction management

Case study

Characteristics of Local Management Deficits in Ilam City

The theoretical framework for indicator extraction combined three conceptual layers: (1) the sociological dimensions of local management effectiveness, including institutional accountability, participatory governance, service equity, social capital, and sustainable development performance; (2) the specific socio-spatial conditions of Ilam as a border-region, post-conflict, intermediate city with ethnic and tribal complexity; and (3) the broader Iranian institutional context, including the formal structure of municipalities and Islamic city councils. The convergence of these layers yielded twenty-one candidate indicators distributed across seven criteria, as presented in Table 3. Tables 1 and 2 below summarise, respectively, the principal dimensions of local management deficits in Ilam City and the applicable local management principles for sustainable development. (Tab. 1)

Local Management Principles for Sustainable Development in Ilam City

The instrument of participatory local management, properly structured within an accountability framework that acknowledges Ilam's distinctive socio-political context, emerges as a particularly well-suited mechanism for translating sustainable development objectives into actionable governance outcomes. The importance of this instrument lies in its capacity to simultaneously address institutional accountability deficits, mobilise community social capital, and generate the cross-sectoral coordination required for integrated sustainable development. On a contextual scale, given Ilam's extreme state

dependency and fiscal constraints, governance reform strategies that rely on internal resource mobilisation and community participation are both more financially viable and more institutionally appropriate than externally financed top-down interventions. Ilam County is located in the central part of Ilam Province in western Iran, adjacent to the Iraq border and within the Zagros Mountain range. The county serves as the administrative and economic core of the province, with Ilam City functioning as the provincial capital. Owing to its mountainous topography, the region is characterized by considerable elevation variations, diverse natural landscapes,

and a temperate mountainous climate. The area contains extensive forested lands, predominantly covered by oak woodlands, which constitute an important component of the western Zagros ecosystem. In addition, numerous seasonal rivers and watersheds contribute to the environmental and ecological significance of the county. The strategic location of Ilam County, together with its role as a regional service center and its distinctive natural setting, has made it a focal area for urban development, spatial planning, and sustainable territorial management in western Iran. (Fig. 1) The applicable local management principles are presented in (Tab. 2).

Table 1: Nature and characteristics of local management deficits in Ilam City (source: authors)

Analytical Dimension	Key Characteristics	Associated Consequences and Challenges	Sources
Institutional-Administrative	Weak inter-agency coordination; absence of integrated planning frameworks; overlapping mandates between municipality, ORUD, and sectoral ministries; low technical capacity within municipal departments; heavy reliance on permit revenues	Fragmented service delivery; unsustainable fiscal structures; inability to pursue long-term strategic planning; failure of integrated development initiatives; misallocation of scarce public resources	Kalantari & Ghaznavy (2020); Zangi-Abadi & Tabrizi (2021); Sheikhi (2019); Statistical Centre of Iran (2021)
Socio-Political	Tribal and kinship networks mediating council elections; low women's representation in governance; high council turnover; weak civil society; limited autonomous associational life	Patronage-driven resource allocation; reproduction of social inequalities through governance; weak institutional trust; difficulty building stable coalitions for sustainable development; exclusion of vulnerable groups	Azкия & Ghaffari (2019); Salehi et al. (2021); Tavakoli (2020); UNDP (2021)
Economic-Fiscal	90%+ state dependency ratio; negligible local tax base; absence of value capture mechanisms; informal economy constituting 35–40% of local GDP; inadequate cross-sectoral investment coordination	Inability to finance sustainable infrastructure; procyclicality of local revenues; perpetuation of informal settlement growth; failure to leverage private sector development partnerships; fiscal vulnerability to central government budget cycles	Osmani (2022); World Bank (2021); Statistical Centre of Iran (2021); Kalantari & Ghaznavy (2020)

Environmental-Spatial	Rapid informal settlement expansion on flood-risk hillside terrain; inadequate solid waste management; water scarcity and distribution inequity; green space deficit (0.8 m ² /capita vs. 9 m ² national standard); fragmented urban form	Elevated natural hazard risk; public health deterioration; social environmental injustice; inability to meet international sustainable urban standards; increasing climate vulnerability with no adaptive capacity programme	Salehi et al. (2021); UNDP (2021); Statistical Centre of Iran (2021); Ebrahimi & Mirzaei (2023)
Post-Conflict Legacies	Psychological trauma effects on civic trust; governance culture shaped by militarisation and top-down reconstruction; infrastructure replacement prioritised over participatory rebuilding; migration-driven social fragmentation	Long-term reduction of social capital and voluntary associational life; normalisation of top-down governance relationships; difficulty mobilising bottom-up development initiatives; persistent cultural marginalisation of western provinces	Liikanen et al. (2021); Tavakoli (2020); Salehi et al. (2021); Azkia & Ghaffari (2019)

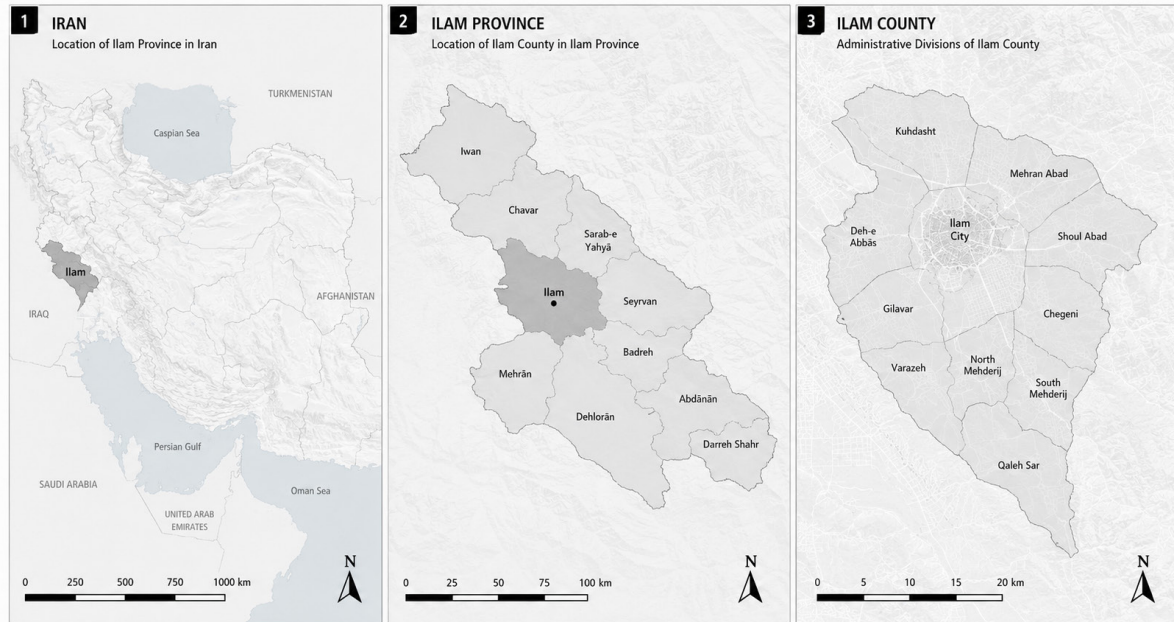


Figure 1: Location of Ilam Province and county in Iran

Table 2: Application of local management principles for sustainable development in Ilam City (source: authors)

Dimension of Impact	Key Mechanism / Characteristic	Expected Benefits for Sustainable Development	Sources
Governance & Accountability	Mandatory transparency reporting; citizen complaint mechanisms; independent audit of municipal accounts; open data on service delivery performance	Reduction of patronage-driven resource misallocation; strengthened institutional trust; creation of evidence base for sustainable planning; deterrence of corruption; improved responsiveness to marginalised community needs	Osmani (2022); World Bank (2021); Teles & Swianiewicz (2018)

Participatory Planning	Neighbourhood-level participatory budgeting; inclusive council consultations with ethnic minority and tribal representatives; women's advisory panels; youth civic engagement programmes	Democratisation of development priority-setting; integration of local knowledge in planning; strengthening of social cohesion; prevention of top-down misallocation; mobilisation of community resources for co-production of services	UNDP (2021); Putnam (1993); Azkia & Ghaffari (2019); Sheikhi (2019)
Fiscal Innovation	Value capture from development projects; local business improvement districts; tourism and cultural heritage revenue streams; graduated municipal service charges; transparent budget allocation criteria	Reduction of fiscal dependency on central state transfers; creation of sustainable revenue base; equity in infrastructure investment across income groups; enabling of long-term capital investment for sustainable infrastructure	World Bank (2021); Kalantari & Ghaznavy (2020); Ebrahimi & Mirzaei (2023)
Social Capital Activation	Formalisation and support of neighbourhood associations; partnership with tribal councils for local governance; integration of religious institutions in service delivery networks; NGO capacity building	Leveraging of existing informal governance networks for sustainable development; creation of social infrastructure for collective action; mobilisation of communal resources for service co-production; strengthening of post-conflict social recovery	Putnam (1993); Sheikhi (2019); Tavakoli (2020); Salehi et al. (2021)
Environmental Governance	Community-based solid waste management; participatory green space planning; hazard mapping with community input; local environmental monitoring committees	Improvement of urban environmental quality; enhancement of climate resilience; integration of environmental justice principles; creation of green economy opportunities; strengthening of intergenerational sustainability commitments	UNDP (2021); Ebrahimi & Mirzaei (2023); Osmani (2022)

Sociological Assessment Dimensions for Local Management in Ilam

Understanding the sociological dimensions of local management effectiveness requires moving beyond purely administrative and financial metrics to encompass the full range of social, cultural, and political dynamics that mediate governance performance. In the classical sociological tradition, effective governance is inseparable from the social structures within which it is embedded structures that either provide the cooperative foundations for collective problem-solving or fragment into competing interests that undermine governance coherence (Putnam, 1993; Ostrom, 1990). Sustainable local management in the context of Ilam

requires pursuing institutional improvement alongside strengthening social capital (preserving inter-ethnic trust, enhancing civic participation), economic mobilisation (activating local economic capacities, reducing state dependency), and environmental governance (improving resource management, enhancing climate resilience) as equivalent and simultaneous goals (Azkia & Ghaffari, 2019; Osmani, 2022). Here, the participatory governance framework acts as a key implementation mechanism for achieving sustainable development goals in Ilam's distinctive context. This framework is aligned with sustainability in two complementary ways: first, from an institutional and environmental perspective, by creating transparent accountability structures and community-based

environmental management mechanisms, it directly contributes to improving governance quality, environmental resilience, and service equity (Osmani, 2022; World Bank, 2021). Second, from a socio-economic perspective, by designing participatory mechanisms that activate local social capital and integrate informal

governance networks, it can build the institutional trust necessary for collective action and distribute the benefits of development in ways that promote equity and social sustainability (Putnam, 1993; UNDP, 2021). The multi-criteria factor matrix for the sociological assessment of local management is presented in (Tab. 3).

Table 3: Criteria-factor matrix for sociological assessment of local management in Ilam City with reference to sustainable development (source: authors)

Concept	Criterion	Factor	Sources
Institutional Governance	Accountability & Transparency	Institutional Transparency Local Council Effectiveness Citizen Complaint Responsiveness Municipal Audit Quality	Osmani (2022); Teles & Swianiewicz (2018); Kalantari & Ghaznavy (2020)
Social Participation	Participatory Governance	Community Participation Rate NGO and Civil Society Engagement Women's Representation Index Youth Civic Engagement (Round 1 only)	Putnam (1993); Azkia & Ghaffari (2019); Sheikhi (2019); UNDP (2021)
Service Equity	Spatial Justice	Service Distribution Equity Infrastructure Access Quality Green Space per Capita (Rounds 1–2 only) Public Health Service Quality	World Bank (2021); Statistical Centre of Iran (2021); Ebrahimi & Mirzaei (2023)
Social Capital	Cohesion & Trust	Social Capital Index Inter-ethnic Trust Level (Rounds 1–2 only) Cultural Cohesion Neighbourhood Association Activity	Putnam (1993); Sheikhi (2019); Tavakoli (2020); Salehi et al. (2021)
Environmental Sustainability	Ecological Governance	Green Infrastructure Access Solid Waste Management Quality (Round 1 only) Physical Resilience Index Climate Adaptation Capacity (excluded pre-Round 1)	UNDP (2021); Ebrahimi & Mirzaei (2023); Osmani (2022)
Economic Development	Fiscal Sustainability	Local Economic Activation Budget Allocation Efficiency Investment Attraction Capacity Informal Economy Integration Local Revenue Diversification (excluded pre-Round 1)	World Bank (2021); Kalantari & Ghaznavy (2020); Osmani (2022)
Urban Services	Service Performance	Urban Service Quality Pedestrian Mobility Access (Round 1 only) Transport Node Accessibility	Statistical Centre of Iran (2021); Zangi-Abadi & Tabrizi (2021)

Methodology

The present study adopts an analytical-applied research design. Given the interpretive paradigm governing the research, the foundational inquiry into core concepts including local governance, sociological dimensions of management effectiveness, and sustainable development grounds the study in a developmental research orientation. Data collection was conducted through documentary and library methods;

the epistemological framework is qualitative. Following a systematic review of theoretical foundations, twenty-one initial indicators were extracted and subjected to evaluation through the Fuzzy Delphi Method, employing a participatory decision-making approach within a fifteen-member expert panel over four sequential rounds, with Ilam City as the case study context. In each round, the mean score, standard deviation, and Kendall's coefficient of concordance

were calculated, and factors failing to meet the escalating consensus threshold were eliminated. This iterative process concluded when Kendall's coefficient reached stability and all remaining indicators exceeded the final threshold of 4.0. The expert panel comprised fifteen specialists selected to satisfy one or more of the following criteria: (i) faculty membership in urban planning, public administration, or sociology with specialisation in local governance, urban management, or sustainable development; (ii) senior management or technical staff in municipal administrations, provincial planning agencies, or urban development organisations with direct operational experience in Ilam or comparable western Iranian cities; and (iii) demonstrated research output in the topic domains of the study. Anonymity among panellists was maintained throughout the Delphi process to prevent social influence bias.

DISCUSSION AND FINDINGS

The Fuzzy Delphi Method (FDM) is a structured, iterative expert consultation technique that integrates fuzzy set theory with the classic Delphi approach. The core advantage of FDM over conventional Delphi lies in its capacity to represent the inherent vagueness and subjectivity of expert judgements through triangular or trapezoidal fuzzy numbers, thereby producing more representative and statistically robust consensus outcomes. In this study, a five-point

Likert scale was used for quantitative rating, and consensus was assessed through Kendall's coefficient of concordance (W) alongside standard deviation analysis across rounds. The expert panel comprised fifteen specialists with documented expertise in urban governance, public administration, sociology, local management, and municipal development. Anonymity among panellists was maintained throughout to prevent conformity bias and group-think. The initial set of twenty-one indicators, extracted from the theoretical framework in Table 3, was subjected to four sequential rounds of evaluation. In Round 1, two indicators were excluded prior to formal circulation due to their derivatory nature: climate adaptation capacity (subsumed within physical resilience index) and local revenue diversification (subsumed within budget allocation efficiency). The remaining eighteen indicators were distributed to the panel. Three further indicators were eliminated at the end of Round 1 (mean < 2.5): pedestrian mobility access, solid waste management quality, and youth civic engagement. In Round 2, two additional indicators fell below the raised threshold of 3.0: inter-ethnic trust level and green space per capita, yielding thirteen indicators. In Round 3, the threshold was raised to 3.5; all thirteen remaining indicators exceeded this level, confirming convergence. In Round 4 against a final threshold of 4.0, all thirteen achieved mean scores exceeding 4.0, with Kendall's W stabilising at 0.794.

Fuzzy Delphi Round 1: Initial Screening (21 to 18 Indicators)

Table 4: Round 1 of the Fuzzy Delphi process: indicator scoring for the proposed local management assessment model in Ilam City

#	Indicator	n	Mean	Std. Dev.	Min	Max
1	Institutional Transparency	15	3.91	0.33	1	5
2	Local Council Effectiveness	15	3.78	0.36	1	5
3	Citizen Complaint Responsiveness	15	3.52	0.38	1	5
4	Municipal Audit Quality	15	3.44	0.47	1	5
5	Community Participation Rate	15	3.70	0.35	1	5
6	NGO and Civil Society Engagement	15	3.05	0.42	1	5

7	Women's Representation Index	15	2.98	0.37	1	5
8	Youth Civic Engagement	15	2.63	0.38	1	5
9	Service Distribution Equity	15	3.35	0.53	1	5
10	Infrastructure Access Quality	15	3.54	0.68	1	5
11	Green Space per Capita	15	2.93	0.62	1	5
12	Public Health Service Quality	15	2.98	0.59	1	5
13	Social Capital Index	15	3.30	0.54	1	5
14	Inter-ethnic Trust Level	15	3.42	0.59	1	5
15	Cultural Cohesion	15	3.32	0.53	1	5
16	Neighbourhood Association Activity	15	2.60	0.49	1	5
17	Green Infrastructure Access	15	3.29	0.52	1	5
18	Solid Waste Management Quality	15	2.65	0.44	1	5
19	Physical Resilience Index	15	3.48	0.46	1	5
20	Local Economic Activation	15	3.25	0.50	1	5
21	Budget Allocation Efficiency	15	3.60	0.48	1	5

Threshold for Round 1: mean > 2.5. Eliminated after Round 1: Youth Civic Engagement (2.63), Neighbourhood Association Activity (2.60), Solid Waste Management Quality (2.65).

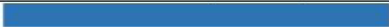
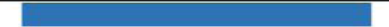



Factor	Mean Score (0–5 Scale)	Score
Institutional Transparency		3.91
Local Council Effectiveness		3.78
Citizen Complaint Responsiveness		3.52
Municipal Audit Quality		3.44
Community Participation Rate		3.70
NGO/Civil Society Engagement		3.05
Women's Representation Index		2.98
Service Distribution Equity		3.35
Infrastructure Access Quality		3.54
Green Space per Capita		2.93
Public Health Service Quality		2.98
Social Capital Index		3.30
Inter-ethnic Trust Level		3.42
Cultural Cohesion		3.32
Green Infrastructure Access		3.29
Physical Resilience Index		3.48
Local Economic Activation		3.25
Budget Allocation Efficiency		3.60
Threshold for Round 1: Mean > 2.5. Red line indicates elimination boundary. Eliminated factors shown in grey with [ELIMINATED] marker.		

Figure 2: Fuzzy Delphi Round 1 – Mean Scores for 18 Indicators Evaluated by Expert Panel (n=15). Threshold = 2.5 (Red). Eliminated factors in grey.

Fuzzy Delphi Round 2: Second Screening (18 to 15 Indicators)

Table 5: Round 2 of the Fuzzy Delphi process: indicator scoring for the proposed local management assessment model

#	Indicator	n	Mean	Std. Dev.	Min	Max
1	Institutional Transparency	15	3.97	0.31	2	5
2	Local Council Effectiveness	15	3.88	0.34	2	5
3	Citizen Complaint Responsiveness	15	3.66	0.36	2	5
4	Municipal Audit Quality	15	3.54	0.42	2	5
5	Community Participation Rate	15	3.72	0.30	2	5
6	NGO and Civil Society Engagement	15	3.14	0.38	2	5
7	Women's Representation Index	15	3.08	0.35	2	5
8	Service Distribution Equity	15	3.92	0.45	2	5
9	Infrastructure Access Quality	15	3.70	0.53	2	5
10	Green Space per Capita	15	3.16	0.41	2	5
11	Public Health Service Quality	15	3.38	0.58	2	5
12	Social Capital Index	15	3.62	0.49	2	5
13	Inter-ethnic Trust Level	15	3.22	0.44	2	5
14	Cultural Cohesion	15	3.78	0.50	2	5
15	Green Infrastructure Access	15	3.55	0.47	2	5

Kendall's W (Round 2) = 0.768. Threshold for Round 2: mean > 3.0. Eliminated after Round 2: Green Space per Capita (3.16) and Inter-Ethnic Trust Level (3.22).

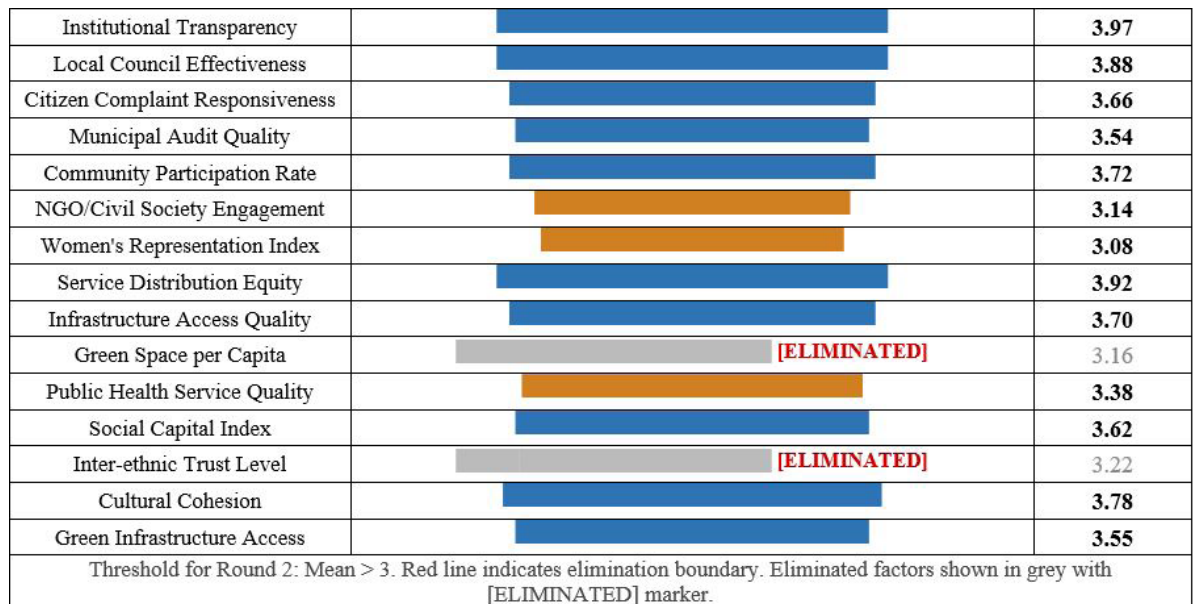


Figure 3: Fuzzy Delphi Round 2 – Mean Scores for 15 Retained Indicators (n=15 experts). Kendall's W = 0.768. Two indicators eliminated (mean < 3.0) shown with [ELIMINATED] marker.

Fuzzy Delphi Round 3: Third Screening (15 to 13 Indicators)

Table 6: Round 3 of the Fuzzy Delphi process: indicator scoring for the proposed local management assessment model

#	Indicator	n	Mean	Std. Dev.	Min	Max
1	Institutional Transparency	15	4.17	0.29	3	5
2	Local Council Effectiveness	15	4.12	0.30	3	5
3	Citizen Complaint Responsiveness	15	4.05	0.28	3	5
4	Municipal Audit Quality	15	3.88	0.35	3	5
5	Community Participation Rate	15	3.92	0.26	3	5
6	NGO and Civil Society Engagement	15	3.57	0.30	3	5
7	Women's Representation Index	15	3.55	0.28	3	5
8	Service Distribution Equity	15	4.08	0.39	3	5
9	Infrastructure Access Quality	15	3.80	0.45	3	5
10	Public Health Service Quality	15	3.54	0.50	3	5
11	Social Capital Index	15	3.94	0.46	3	5
12	Cultural Cohesion	15	3.82	0.38	3	5
13	Green Infrastructure Access	15	3.75	0.48	3	5

Kendall's W (Round 3) = 0.791. Threshold for Round 3: mean > 3.5. All 13 indicators retained; Kendall's W increased only 0.023 over Round 2, indicating stabilisation of expert consensus.

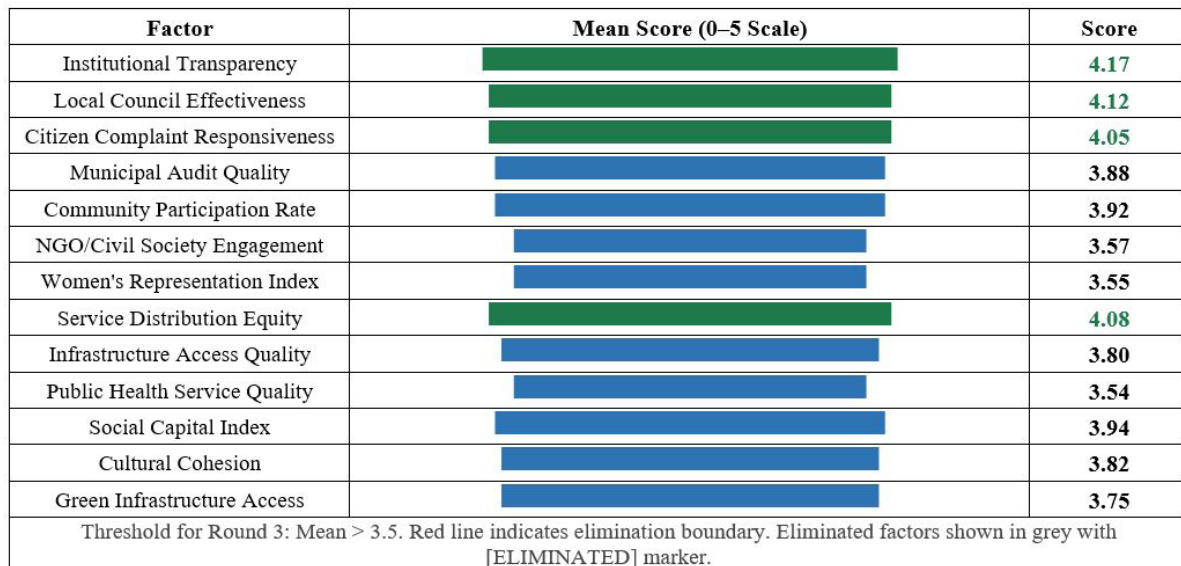


Figure 4: Fuzzy Delphi Round 3 – Mean Scores for 13 Retained Indicators (n=15 experts). Kendall's W = 0.791. All 13 indicators exceeded Round 3 threshold (3.5), confirming convergence.

Fuzzy Delphi Round 4: Final Confirmation (13 Indicators – Proposed Model)

Table 7: Round 4 of the Fuzzy Delphi process: final confirmation of 13 proposed model indicators for local management assessment in Ilam City

#	Indicator	n	Mean	Std. Dev.	Min	Max
1	Institutional Transparency	15	4.26	0.27	3	5
2	Local Council Effectiveness	15	4.22	0.25	3	5
3	Citizen Complaint Responsiveness	15	4.18	0.28	3	5
4	Municipal Audit Quality	15	4.05	0.29	3	5
5	Community Participation Rate	15	4.18	0.21	3	5
6	NGO and Civil Society Engagement	15	4.09	0.22	3	5
7	Women's Representation Index	15	4.07	0.24	3	5
8	Service Distribution Equity	15	4.15	0.34	3	5
9	Infrastructure Access Quality	15	4.09	0.36	3	5
10	Public Health Service Quality	15	4.04	0.35	3	5
11	Social Capital Index	15	4.12	0.31	3	5
12	Cultural Cohesion	15	4.08	0.28	3	5
13	Green Infrastructure Access	15	4.11	0.30	3	5

Kendall's W (Round 4) = 0.794. All 13 indicators confirmed (mean > 4.0). Incremental change in W from Round 3 to Round 4 = +0.003, confirming stable consensus. Expert consultation terminated.

CLUSTER I: GOVERNANCE & INSTITUTIONAL CAPACITY	
Institutional Transparency ★	■■■ Mean = 4.26
Local Council Effectiveness ★	■■■ Mean = 4.22
Community Participation Rate	■■ Mean = 4.18
Service Distribution Equity	■■ Mean = 4.15
Social Capital Index	■■ Mean = 4.12
Cultural Cohesion	■■ Mean = 4.08
Green Infrastructure Access	■■ Mean = 4.11
Physical Resilience Index	■■ Mean = 4.09
Urban Service Quality	■ Mean = 4.04
Local Economic Activation	■■ Mean = 4.07
Budget Allocation Efficiency	■ Mean = 4.03
Investment Attraction Capacity	■ Mean = 4.01
Informal Economy Integration	■ Mean = 4.00
★ Factors with mean ≥ 4.20 marked with star. Red dashed threshold: 4.0. Gradient shading reflects score magnitude. Kendall's W (Round 4) = 0.794.	

Figure 5: Fuzzy Delphi Round 4 (Final) – Confirmed mean scores for 13 proposed model indicators structured by cluster. Indicators with mean ≥ 4.20 marked with *. Red dashed threshold: 4.0. Gradient shading reflects relative score magnitude.

Post-Delphi Analytical Synthesis

The cessation of expert consultation after the fourth round was justified by four converging conditions. First, in Round 2, more than fifty per cent of panellists rated the retained indicators as having high or very high importance, satisfying the standard FDM majority criterion. Second, the standard deviation of indicator importance scores decreased substantially from Round 2 to Round 3, and again from Round 3 to Round 4, indicating progressive convergence of expert judgements. Third, Kendall's *W* increased from 0.768 in Round 2 to 0.791 in Round 3 and 0.794 in Round 4; given that the panel exceeded ten members, these values are statistically highly significant. Fourth, the marginal increase in *W* between Round 3 and Round 4 was only 0.003, indicating that further rounds would yield diminishing informational returns. The four conditions together confirm theoretical saturation and stable expert consensus. The convergence of the four-round Fuzzy Delphi process around thirteen confirmed indicators represents a significant methodological and substantive achievement. The reduction from twenty-one candidate indicators to thirteen final indicators through iterative expert consensus embodies a progressive distillation of theoretical breadth into operational precision. Kendall's *W* progressing from 0.768 in Round 2 to 0.794 in Round 4 demonstrates that the expert community possesses a coherent and stable shared understanding of the indicators most critical to effective local management in Ilam's distinctive governance context – an outcome that carries considerable weight for policy formulation given the documented complexity and contested nature of local governance reform in Iran (Kalantari & Ghaznavy, 2020; Azkia & Ghafari, 2019).

Institutional transparency (4.26) and local council effectiveness (4.22), co-ranking as the two highest-priority indicators, constitute the foundational pillars of the proposed local man-

agement assessment model. This result is both theoretically consistent and empirically grounded: the absence of systematic transparency mechanisms in Iranian municipal governance is a documented driver of public mistrust and patronage-based resource allocation (Sheikhi, 2019; Zangi-Abadi & Tabrizi, 2021), while weak council effectiveness – reflecting both inadequate technical capacity and vulnerability to tribal and kinship networks – remains the primary institutional barrier to strategic local governance in Ilam (Tavakoli, 2020; Salehi et al., 2021). The co-primacy of these two indicators signals that sustainable local management reform in Ilam must simultaneously address information asymmetries and institutional capacity deficits – a conclusion that reinforces the fundamental logic of participatory governance frameworks.

Community participation rate (4.18) and citizen complaint responsiveness (4.18), sharing the third rank, establish participatory governance mechanisms as central to the proposed model. This finding is consistent with the wider literature on local governance in contexts characterised by post-conflict social fragmentation and ethnic plurality, which consistently identifies inclusive participation as the primary mechanism for rebuilding the institutional trust necessary for effective collective governance (Putnam, 1993; UNDP, 2021). Drawing on Sheikhi (2019), who demonstrates that neighbourhood associations and religious institutions in Iranian cities function as critical mediators of civic participation, the present findings suggest that sustainable governance reform in Ilam must engage with the informal social architecture of participation rather than relying exclusively on formal institutional channels.

Service distribution equity (4.15), ranking fifth, reflects the expert panel's recognition that the legitimacy of local governance in divided societies is fundamentally dependent on the perceived fairness of resource allocation across spatial and social groups. In Ilam's context –

where the rapid spatial expansion of the city through informal settlement growth has produced significant disparities in service access between established central neighbourhoods and newer peripheral districts – equity in service distribution is not merely a normative aspiration but a functional prerequisite for social cohesion and political stability (Statistical Centre of Iran, 2021; Ebrahimi & Mirzaei, 2023). The LRA-inspired insight that spatial equity is a necessary condition for social sustainability applies with particular force in this context, where the combination of geographic isolation, ethnic diversity, and post-conflict legacy creates multiple intersecting axes of potential service inequity.

Social capital index (4.12) and green infrastructure access (4.11) achieved near-identical mean scores in the final round, together representing two dimensions of urban sustainability that are frequently neglected in purely administrative assessments of local management performance. The expert consensus around social capital reflects the theoretical insight, advanced by Putnam (1993) and validated in the Iranian context by Sheikhi (2019), that governance effectiveness is fundamentally dependent on the density and quality of social networks that enable information sharing, collective action, and mutual accountability. Green infrastructure access, while marginally below social capital in the final ranking, signals the panel's recognition that environmental quality is an increasingly important dimension of local management performance particularly in a city like Ilam where the deficit of urban green space per capita (0.8 m² against a national standard of 9 m²) represents both a governance failure and a public health risk (Ebrahimi & Mirzaei, 2023).

NGO and civil society engagement (4.09), cultural cohesion (4.08), women's representation index (4.07), and infrastructure access quality (4.09) cluster in the mid-range of the final indicator hierarchy, representing governance dimensions that the expert panel identified as important but contingent – that is, their

contribution to sustainable local management is significantly mediated by the resolution of the higher-priority governance, participation, and equity challenges. Municipal audit quality (4.05) and public health service quality (4.04) ranked at the base of the confirmed indicator set, reflecting the panel's judgement that while these dimensions are necessary components of sustainable local management, they are more directly dependent on fiscal resources and technical capacity both of which are externally constrained in Ilam's governance context than on the internal governance reforms that higher-ranking indicators address.

The elimination of youth civic engagement, neighbourhood association activity, and solid waste management quality before or at the threshold of Round 1 reveals an important epistemological dimension of the expert consensus. The panel collectively judged these indicators as either too operationally peripheral youth engagement being a desirable long-term outcome rather than a current management lever or too sector-specifically technical solid waste management being a service delivery rather than a governance assessment variable to merit independent inclusion in a sociological assessment model for local management. This interpretive conclusion suggests that the proposed thirteen-indicator model is structured around governance process variables rather than service delivery outcome variables, a distinction that has important implications for how the model should be applied in practice.

RESULTS AND CONCLUSION

This study set out to develop a validated, participatory sociological assessment framework for local management in Ilam City, Iran, with implications for sustainable urban development, employing the Fuzzy Delphi Method for systematic expert consensus-building. The research yields five principal results.

•First, the four-round FDM process, applied to a panel of fifteen domain experts with Ken-

dall's *W* stabilising at 0.794, produced a final set of thirteen validated indicators forming the proposed operational assessment model. The progressive reduction from twenty-one initial indicators through three successive elimination rounds demonstrates the discriminatory power of the FDM in identifying the core determinants of local management effectiveness in this context.

•Second, institutional transparency (4.26) and local council effectiveness (4.22) emerged as the co-highest-priority indicators, confirming the dual structural diagnosis of local governance failure in Ilam: information opacity and institutional capacity deficits are the two most fundamental barriers to effective and sustainable local management, and any viable governance reform strategy must be explicitly designed to address both simultaneously (Osmani, 2022; Kalantari & Ghaznavy, 2020; Sheikhi, 2019).

•Third, community participation rate (4.18) and service distribution equity (4.15) ranked among the top five indicators, establishing participatory governance and spatial justice as primary objectives for local management reform in the Iranian context. This finding is directly applicable to the governance reform planning of Ilam City, where participation deficits and service access disparities are among the most severely documented conditions (Salehi et al., 2021; Statistical Centre of Iran, 2021).

•Fourth, the decreasing standard deviations across rounds and the stability of Kendall's *W* between Rounds 3 and 4 (change of +0.003) confirm theoretical saturation, validating the methodological rigour of the FDM application and the reliability of the resulting model. This level of consensus is particularly significant given the acknowledged complexity and multi-stakeholder nature of local governance reform decision-making in the Iranian institutional context (Azkia & Ghaffari, 2019; Zangi-Abadi & Tabrizi, 2021).

•Fifth, the analytical synthesis of post-Delphi findings reveals a structured hierarchy within

the thirteen-indicator model: the highest-priority cluster encompasses governance, accountability, and participation variables that directly govern the legitimacy and effectiveness of local management; the mid-priority cluster contains service equity, social capital, and environmental variables that determine the quality and sustainability of governance outcomes; and the lower-priority cluster comprises technical capacity and sector-specific service delivery variables whose achievement is contingent on the successful resolution of the higher-priority governance conditions.

The theoretical contribution of this study lies in its operationalisation of the intersection between sociological governance theory and sustainable urban development within the distinctive institutional context of an Iranian border-region city, filling a documented gap in both domestic urban planning scholarship and practitioner guidance. The methodological contribution lies in the systematic application of four-round FDM with statistical convergence validation to a multi-dimensional local management assessment model, demonstrating the instrument's suitability for problems characterised by high stakeholder plurality and institutional uncertainty. The practical contribution lies in the production of a thirteen-indicator model that is directly applicable by urban planners, municipal decision-makers, provincial governance reform agencies, and international development partners to the assessment and improvement of local management in Ilam and comparable Iranian intermediate cities.

The study is subject to certain limitations. The expert panel of fifteen members, while meeting the standard threshold for statistical significance of Kendall's *W*, may not capture the full diversity of expert opinion across all institutional and ethnic community perspectives relevant to Ilam's governance. The model's validation through FDM establishes consensus but does not constitute empirical testing in a specific governance reform project; such testing remains

necessary before widespread application. Future research should apply the proposed model to multiple Iranian border-region city case studies using FAHP or FTOPSIS weighting approaches, enabling context-specific calibration of indicator priorities. Longitudinal studies monitoring governance reform outcomes in Ilam guided by the model would further validate its predictive utility. Comparative research examining the application of the model in non-border intermediate cities would advance understanding of the context-specific dimensions of the framework and the modifications required for effective deployment across Iran's diverse urban landscape.

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