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Integrated Humanization: A Gulf-Centric Urban Paradigm

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ABSTRACT

Urban frameworks in the Gulf face unique challenges of extreme climate, car dependency, and fragmented planning systems. Conventional models of “humanizing cities,” derived from Western or East Asian contexts, are often ill-suited to the Arabian Peninsula’s social and environmental realities. This paper introduces Integrated Humanization, a Gulf-specific framework that merges five dimensions—urban planning, urban humanization, public transport, road engineering, and micro-mobility—into a cohesive paradigm. Through policy analysis of Oman Vision 2040 and the Greater Muscat Structure Plan, combined with an extensive literature review, the study demonstrates how these domains interact to produce sustainable, livable, and culturally adapted cities. A pilot project model is proposed for Muscat to test the feasibility of Integrated Humanization, focusing on neighborhood-scale retrofits that combine shaded corridors, micro-mobility hubs, and re-engineered streets linked to future metro and BRT systems. The results emphasize that Integrated Humanization not only addresses car dependency but also improves public health, enhances equity, and strengthens Gulf cities’ alignment with national visions for sustainability. Ultimately, the framework positions Oman and the wider Gulf as pioneers in defining a climate- and culture-specific grammar for human-centered urbanism.

INTRODUCTION

Rethinking Gulf Urbanism

Across the Gulf region, cities are facing a decisive turning point. Built on rapid development and automobile-based mobility, urban systems are now strained by congestion, environmental degradation, and social alienation. The contemporary Gulf city is not merely a network of streets and districts but a complex organism where human life, economic growth, and cultural identity converge. However, the dominance of cars and infrastructure designed almost exclusively for motorized mobility has led to what Al-Kindi (2021) terms an “urban imbalance.” Unlike conventional planning paradigms imported from Europe, North America, or East Asia—where density, climate, and commuting culture differ radically—the Gulf demands a model that addresses extreme heat, cultural practices, and entrenched reliance on private cars. This article introduces Integrated Humanization, developed by Eng. Mohammad Abdullah Saad, as a new paradigm tailored for Gulf realities. The framework integrates five domains—urban planning, urban humanization, public transportation, road engineering, and micro-mobility—into a unified model where the human experience takes center stage.

By integrating these dimensions, Gulf cities can move beyond fragmented, silo-based planning and pursue an urban future that is sustainable, resilient, and people-centered. Integrated Humanization thus provides both a theoretical framework and a practical pathway to realize the ambitions of Oman Vision 2040 and the Greater Muscat Structure Plan.

LITERATURE REVIEW

Imported Models of Urban Humanization

The concept of “humanizing cities” has deep roots in Euro-American and East Asian planning traditions, emphasizing walkability, street life, plazas, and public transit integration (Gehl, 2010; Newman & Kenworthy, 2015). While these models have produced measurable benefits in temperate and dense urban contexts, their direct transfer to the Gulf has faced challenges. In hot-arid climates, walking long distances under intense solar radiation often becomes impractical, rendering walkability-centered paradigms aspirational rather than operational (Negev *et al.*, 2020).

Climatic and Social Constraints in the Gulf

Studies consistently highlight the physiological stress of heat on outdoor activities in Gulf cities. Without shade or microclimate-sensitive design, pedestrian volumes remain low regardless of infrastructure investments (Middel *et al.*, 2016; Alharthi *et al.*, 2025). This reality has produced urban spaces dominated by private cars, further entrenching congestion and air pollution (Shaaban & Muley, 2018). Scholars such as Al-Kindi (2021) describe this as an “urban imbalance,” where imported design models neglect the Gulf’s cultural practices and environmental limits.

Oman Vision 2040 and Policy Frameworks

Oman Vision 2040 positions sustainability, livability, and balanced ecosystems as strategic priorities (Oman Vision 2040, 2020). Its urban development agenda calls for

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resilient infrastructure, integrated mobility, and improved quality of life. Complementing this, the Greater Muscat Structure Plan (GMSP) seeks to restructure Muscat into a livable, productive, connected, green, and inclusive city (MoHUP, 2021).

It emphasizes mass transit corridors (metro and BRT), walkability improvements, and coastal mobility, but the challenge of first/last-mile connectivity persists. Without systemic integration, these goals risk being undermined by entrenched car dependency (Heyman & Hasan, 2023).

Gaps in Current Scholarship

Existing literature on Gulf urbanism has identified fragmented governance as a central barrier: urban planning, road engineering, and transport policy often operate in institutional silos (Al-Rawas & Khan, 2019). Humanization efforts are typically symbolic—such as isolated pedestrian streets—rather than systemic reforms. While public transport projects are proposed in Muscat, Riyadh, and Doha, their long-term success depends on

neighborhood-scale accessibility and micro-mobility integration (Curtis & Scheurer, 2017; Litman, 2021).

Theoretical Contribution of Integrated Humanization

This paper addresses these gaps by advancing Integrated Humanization (IH) as a holistic paradigm that synthesizes five interdependent dimensions: urban planning, urban humanization, public transport, road engineering, and micro-mobility. Rather than treating them as separate disciplines, IH frames them as mutually reinforcing pillars adapted to Gulf climatic and cultural contexts.

By doing so, the model builds upon—but also departs from—Western and East Asian traditions, offering a Gulf-centric grammar for sustainable and people-oriented cities. As illustrated in Table 1, a comparison between Western/East Asian models, the Gulf urban context, and the proposed Integrated Humanization framework demonstrates the critical gaps and the necessity of a Gulf-specific paradigm.

Table 1: Comparative Framework of Urban Models vs. Integrated Humanization

| Dimension | Western/East Asian Models | Gulf Urban Context | Integrated Humanization (IH) |
|--------------------|--|---|--|
| Urban Planning | Compact, mixed-use; “15-minute city”; high density. | Low-density, zoning separation; urban sprawl; car-dependent expansion. | Proximity-based clusters adapted to Gulf climate; shaded corridors; integrated land-use and mobility. |
| Urban Humanization | Walkability, plazas, street life, greenery as leisure/lifestyle. | Limited outdoor activity due to heat; reliance on malls and cars; symbolic pedestrian zones. | Climate-adapted humanization: shaded walkways, hybrid greenery, inclusive public spaces as survival/adaptation strategy. |
| Public Transport | Dense metro/BRT networks with strong last-mile (cycling, walking). | Underdeveloped; planned systems (e.g., Muscat Metro) risk underuse due to weak first/last-mile connections. | Metro/BRT as backbone, supported by micro-mobility hubs and humanized station access. |
| Road Engineering | Multi-modal streets, traffic calming, pedestrian priority. | Wide arterial roads; speed/flow prioritized; pedestrian-hostile designs. | ROW redesign: narrower lanes (3.0m), protected micro-mobility lanes, safety and equity prioritized. |
| Micro-Mobility | Integrated e-bikes, scooters, shared mobility linked with metro. | Rare or absent; cultural reliance on private cars; harsh outdoor conditions. | Protected 2.0m lanes, shaded micro-mobility hubs, golf-buggies/NEVs as last-mile and short-trip enablers. |

This comparison highlights that while imported models emphasize walkability and density, and Gulf practices prioritize car-oriented growth, Integrated Humanization combines climate-responsive, people-centered, and multi-modal principles into a coherent framework.

MATERIALS AND METHODS

This study adopts a qualitative and exploratory research design, combining policy analysis, literature synthesis, and conceptual framework building. The methods applied are structured as follows:

Policy Analysis

Key national and metropolitan frameworks were examined to identify gaps and opportunities in Gulf

urban planning. This included:

- Oman Vision 2040 (Ministry of National Economy, 2020), which prioritizes sustainability, livability, and balanced ecosystems.
- Greater Muscat Structure Plan (GMSP) (MoHUP, 2021), which outlines metro corridors, BRT systems, and urban growth strategies.

The analysis focused on policy ambitions versus practical bottlenecks—especially the challenge of car dependency and first/last-mile connectivity.

Literature Synthesis

An extensive review of peer-reviewed studies and institutional reports was conducted, covering:

- Urban humanization and walkability (Gehl, 2010);

Newman & Kenworthy, 2015).

- Climate-responsive design and thermal comfort (Middel *et al.*, 2016; Alharthi *et al.*, 2025).
- Public transport accessibility and last-mile challenges (Curtis & Scheurer, 2017; Litman, 2021).
- Gulf urbanization trends and critiques of fragmented governance (Al-Kindi, 2021; Al-Rawas & Khan, 2019).

This synthesis allowed the extraction of transferable lessons and highlighted gaps in adapting global models to Gulf realities.

Conceptual Framework Development

Building upon policy and literature review, the research developed the Integrated Humanization (IH) framework. The model synthesizes five domains—urban planning, urban humanization, public transport, road engineering, and micro-mobility—into a unified paradigm. Each domain was analyzed for:

- Its independent contribution to urban livability.
- Its interdependence with the other four domains.
- Its cultural and climatic relevance to Gulf cities.

Case-Based Reasoning

To demonstrate practical applicability, Muscat was chosen as a case city. The choice is justified by:

- The scale and ambition of the GMSP.
- Oman Vision 2040's explicit call for sustainable mobility.
- Muscat's current car dependency and fragmented planning practices.

The proposed Pilot Project within a Muscat neighborhood serves as a testing ground for Integrated Humanization, enabling measurable evaluation before wider implementation.

Research Validity and Limitations

Validity

The framework draws from internationally recognized literature and official Omani policy documents, ensuring both scholarly and policy relevance.

Limitations

As a conceptual paper, it does not provide quantitative simulations. Future work should include empirical studies (e.g., microscale thermal audits, user surveys, and mode shift measurements).

RESULTS & DISCUSSION

Defining Integrated Humanization (IH)

The analysis demonstrates that Gulf cities require a new paradigm that adapts the ideals of human-centered urbanism to extreme climates and entrenched car dependency. Integrated Humanization (IH) is defined as a Gulf-specific framework that merges five interdependent dimensions:

Urban Planning

reorganizing neighborhoods into mixed-use, proximity-based clusters that reduce trip distances.

Urban Humanization

embedding shade, greenery, and inclusive public spaces as climate adaptation strategies.

Public Transport

designing mass transit systems as the backbone of mobility, integrated with human-scale access.

Road Engineering

shifting from car-flow efficiency to multi-modal, safe, and equitable street design.

Micro-Mobility

enabling short-distance, low-speed, and shaded movement options (e-scooters, e-bikes, buggies).

IH positions these not as isolated sectors but as mutually reinforcing pillars, creating a systemic shift from car-centric to human-centered Gulf urbanism. Figure 1 visualizes the Integrated Humanization framework, illustrating how the five domains interact to form a unified, Gulf-centric paradigm.

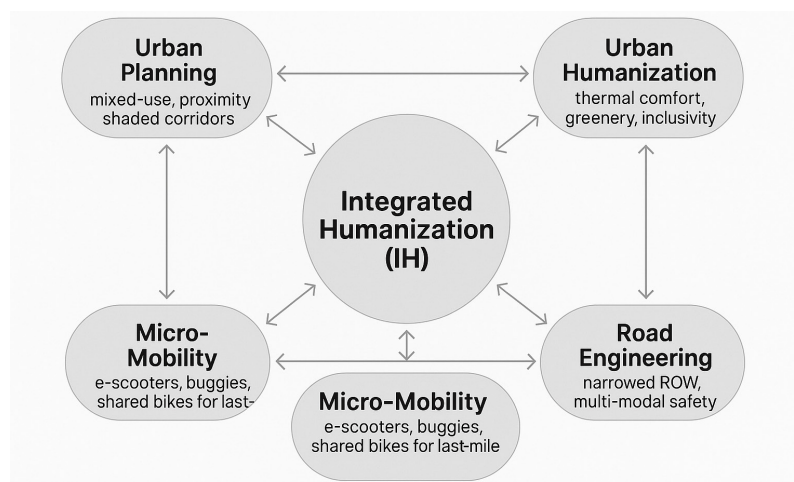


Figure 1: The Five Dimensions of Integrated Humanization (IH) in the Gulf Context: IH integrates five interdependent domains, ensuring Gulf urbanism is climate-adapted, culturally relevant, and people-centered.

As depicted in Figure 1, the strength of IH lies in merging these domains into one coherent system, rather than addressing them as isolated sectors.

Why Integration Matters

The findings underscore that silo-based approaches are insufficient:

- Urban planning without transport integration reinforces sprawl.
- Public transport without micro-mobility fails at last-mile access.
- Road engineering without humanization produces unsafe, heat-exposed streets.
- Micro-mobility without planning lacks infrastructure support.

IH addresses these failures by treating the five domains as interdependent parts of a single ecosystem, ensuring that improvements in one area reinforce the others.

Alignment with Vision 2040 and GMSP

- Oman Vision 2040 emphasizes sustainability, livability, and reduced car dependency through integrated mobility systems (Oman Vision 2040, 2020). IH directly supports these objectives by embedding neighborhood-scale solutions into the national framework.
- The Greater Muscat Structure Plan (MoHUP, 2021) proposes metro and BRT corridors but risks underperformance without robust neighborhood integration. IH strengthens the plan by introducing shaded micro-mobility lanes, redesigned rights-of-way (ROW), and humanized access to transit stations.

Pilot Project as Proof-of-Concept

A pilot neighborhood project in Muscat is proposed to test the IH framework:

Scope

Conversion of 1.5–2 km of residential streets, lane narrowing to 3.0 m, and a 2.0 m protected IH lane.

Thermal Comfort

Hybrid shading (trees + permeable canopies), shaded rest stops every 250–300 m.

Micro-Mobility Fleet

30–50 shared e-scooters/e-bikes and 10–15 neighborhood buggies, digitally integrated with bus/metro fares.

Access

Direct linkage to a proposed BRT or metro station (as per GMSP).

Key Performance Indicators (KPIs)

Mode shift

% of trips <3 km made by non-car modes.

Comfort

Reduction in mean radiant temperature (T_{mrt}) on pilot routes.

Accessibility

% of residents within 8–10 min of a high-frequency transit stop.

Equity

participation rates by women, youth, and elderly groups. This pilot minimizes political and financial risk while generating the evidence base needed for scaling. Table 2 outlines the proposed scope, components, and evaluation framework of a pilot neighborhood project in Muscat, designed to operationalize Integrated Humanization principles.

Table 2: Proposed Pilot Project for Integrated Humanization in Muscat

| Component | Description | Expected Outcomes | Key Performance Indicators (KPIs) |
|----------------------|---|--|---|
| Scope | Retrofit of 1.5–2 km of residential streets in Muscat. Lane narrowing (3.65 → 3.0 m) + 2.0 m IH lane. | Demonstrates feasibility of IH at neighborhood scale. | % of streets redesigned; km of protected IH lanes delivered. |
| Thermal Comfort | Hybrid shading: clustered trees + permeable canopies; shaded rest stops every 250–300 m. | Reduced heat stress; improved outdoor usability. | Change in mean radiant temperature (T _{mrt}); resident comfort surveys. |
| Micro-Mobility Fleet | 30–50 shared e-scooters/e-bikes + 10–15 neighborhood buggies; integrated ticketing with bus/metro. | Expanded short-distance mobility; cultural acceptance of shared modes. | Fleet utilization rates; modal share of trips <3 km. |
| Access to Transit | Direct link to BRT or planned Muscat Metro station. | Stronger last-mile connectivity; improved viability of mass transit. | % households within 8–10 min of transit stop via IH network. |

| | | | |
|----------------------|--|--|--|
| Safety & Inclusivity | Traffic calming (≤ 40 km/h); daylighted intersections; gender/youth-friendly design. | Safer, more inclusive streets for all users. | 85th percentile speeds; conflict counts; usage by women, youth, elderly. |
| Governance & Scaling | Embedded in ONSS National Planning Standards; monitored with KPIs. | Evidence base for future expansion; integration into national codes. | Policy adoption; replication in other neighborhoods. |

As seen in Table 2, the pilot project serves as both a risk mitigation tool and an evidence base, bridging theory with practice and providing decision-makers with measurable outcomes for scaling.

Micro-Mobility as the Foundation of Public Transport Success

The results highlight that metro or BRT systems cannot succeed in the Gulf without last-mile solutions. Micro-mobility acts as the bridge:

- Reducing exposure time to heat.
- Extending the practical radius of transit access to 2–4 km.
- Offering flexible, culturally adaptable vehicles (e.g., golf-buggies, neighborhood EVs).

IH therefore ensures that large-scale investments in metro systems are socially accepted, climatically viable, and practically usable.

Cultural and Regional Implications

Findings suggest that IH is not merely a technical solution but a cultural adaptation strategy. By normalizing shaded micro-mobility and humanized streets, Gulf societies can begin to shift commuting habits gradually away from private cars. Moreover, the framework aligns with Saudi Vision 2030 and similar Gulf initiatives, suggesting regional scalability and cooperation potential.

CONCLUSION

This study has introduced Integrated Humanization (IH) as a Gulf-centric paradigm that merges five essential domains—urban planning, urban humanization, public transport, road engineering, and micro-mobility—into a unified model for sustainable urbanism. The results underscore that imported frameworks, whether European or East Asian, often fail in the Gulf due to climatic extremes and cultural reliance on private cars. By contrast, IH adapts the principles of human-centered urbanism to the realities of Gulf societies, emphasizing shaded, multi-modal, and neighborhood-scale solutions. The analysis further demonstrates that IH is not only theoretically sound but also aligned with Oman’s strategic frameworks. Oman Vision 2040 emphasizes livability, sustainability, and reduced car dependency, while the Greater Muscat Structure Plan (GMSP) provides a metropolitan-scale blueprint for transit-oriented development. IH acts as the operational bridge between these national aspirations and everyday life, ensuring that major infrastructure projects such as Muscat’s planned metro and BRT are both socially and climatically viable.

Ultimately, Integrated Humanization offers more than a planning framework; it provides a Gulf grammar for urbanism, one that redefines streets, transport, and neighborhoods as interdependent systems designed for people—not just for cars.

Recommendations

Building upon the findings, the following recommendations are proposed:

Pilot Neighborhood Implementation

Begin with a 12-month pilot project in Muscat, retrofitting a residential district with IH features (narrowed lanes, shaded micro-mobility corridors, shared fleets). Use KPIs such as mode shift, thermal comfort, and equity of access to measure success.

Integration into Planning Standards

Incorporate IH principles into Oman’s National Planning Standards and municipal codes, ensuring that humanization and micro-mobility are embedded into future urban development.

Support for Public Transport Systems

Link micro-mobility hubs directly with planned metro and BRT stations to guarantee last-mile access, thereby improving the viability of mass transit.

Regional Collaboration

Extend IH beyond Oman by aligning with broader Gulf strategies, such as Saudi Vision 2030 and Qatar’s National Vision, to promote a Gulf-wide urban code that integrates climate-responsive and people-centered planning.

Incremental Scaling

Avoid immediate large-scale investments without evidence. Use pilot results to guide scaling across Muscat and later into other Gulf cities, reducing financial and political risks.

Community Engagement

Engage residents in the pilot design and monitoring phases to ensure cultural acceptance, user comfort, and long-term behavioral change away from car dependency.

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