

Article

Sustainable Public Space Reconstruction in Post-Conflict Iraq: A User-Satisfaction Framework

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Abstract

Public spaces in Iraqi cities carry social memory, daily trade, and civic trust; therefore, post-conflict reconstruction must be evaluated through social performance as well as physical repair. This study develops a user-satisfaction framework for sustainable and resilient public space reconstruction in post-conflict Iraq. A convergent mixed-methods design was used, combining literature and site analysis with Likert-scale surveys of residents and experts in two public-commercial case studies: Eski Bazaar and Najafi Street. The resident survey included 901 valid respondent records (Eski Bazaar, $n = 451$; Najafi Street, $n = 450$), and the expert survey included 89 respondent records (Eski Bazaar, $n = 48$; Najafi Street, $n = 41$). The analysis used weighted means, standard deviations, medians, percentage agreement, site comparison, and reliability testing. Cronbach's Alpha showed acceptable to excellent internal consistency for the local surveys (0.79 and 0.91) and excellent internal consistency for the expert surveys (0.93 for both sites). Results show that Najafi Street scored higher than Eski Bazaar across all local factors, especially cultural preservation (3.15 versus 2.71) and accessibility (2.57 versus 2.30), while accessibility remained the weakest local dimension in both cases. Expert results similarly favored Najafi Street, particularly for cultural preservation (3.28 versus 2.83) and accessibility (3.26 versus 2.94). The findings were translated into a five-pillar framework covering community engagement, cultural preservation, environmental stewardship, economic revitalization, and adaptive resilience. The framework is preliminarily validated through construct reliability, cross-case application, expert-local triangulation, and monitoring indicators, while future post-occupancy testing is recommended.

Keywords: public spaces; architectural reconstruction; urban resilience; user satisfaction; post-conflict Iraq



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1. Introduction

Public spaces in post-conflict cities are not only physical settings; they are social infrastructure through which safety, memory, trade, and civic confidence return to everyday life [1–3]. Streets, markets, plazas, and heritage edges allow residents to judge whether reconstruction has reached their daily environment and whether the rebuilt place supports comfort, access, belonging, and routine public use [4–6].

In Iraq, this question is especially important because public spaces often combine war damage, economic decline, heritage loss, weak services, displacement, and fragmented governance [7–13]. Reconstruction that focuses only on visible repair can overlook less

visible but equally important problems, such as declining markets, poor accessibility, weak shade, limited participation, and loss of local identity.

Previous studies provide strong evidence on public space quality, participation, social sustainability, heritage recovery, environmental comfort, and urban resilience [14–28]. However, these themes are often studied separately. Fewer studies explain how local satisfaction and expert judgment can be converted into a practical reconstruction framework for Iraqi public spaces affected by different conflict pathways.

This study addresses that gap by comparing Eski Bazaar, which reflects economic pressure and public space decline, with Najafi Street, which reflects severe wartime damage, heritage loss, and later reconstruction attention. The aim is to develop a framework for sustainable and resilient public space reconstruction in post-conflict Iraq based on user satisfaction, expert assessment, site interpretation, and monitoring logic.

The novelty of the study is fourfold. First, it shifts the evaluation of post-conflict public space reconstruction from physical completion toward user satisfaction and daily use. Second, it compares two Iraqi cases affected by different forms of conflict impact, which helps avoid a narrow focus on visibly destroyed areas only. Third, it integrates resident and expert survey evidence with literature and site reading to build the five-pillar framework. Fourth, it adds a preliminary validation route through reliability testing, cross-case application, expert-local triangulation, and monitoring indicators that can guide future post-occupancy evaluation.

2. Literature Review

2.1. Public Spaces and Reconstruction

Public space is usually described as the physical and social ground where urban life becomes visible through movement, gathering, trade, and shared use. In post-conflict settings, this role becomes more sensitive because streets, plazas, markets, and small open areas can hold memories of fear, loss, and return. The quality of public space depends on access, comfort, use, and human scale, and publicness also depends on who can appear, speak, and belong in the city [3–6]. Studies on urban green, public visual quality, and public open-space use show that seating, shade, legibility, maintenance, and landscape elements can change how long people stay and who feels able to use the space [29–35]. The paper therefore treats public spaces as social infrastructure in which architectural decisions must support safety, belonging, comfort, and the return of normal urban routines.

2.2. Post-Conflict Reconstruction and Urban Recovery

Post-conflict reconstruction is not a single stage after the end of violence. It usually moves through emergency clearance, temporary repair, medium-term rebuilding, and longer social recovery. Recovery literature describes reconstruction as an evolving process that joins institutions, finance, security, and community needs, while also warning that aid becomes fragile when local power relations are not understood [1,2]. Resilient urban planning adds that recovery should reduce future risk and learn before the next disturbance occurs [36]. Cases such as Sarajevo, Aleppo, Beirut, and Iraq show that rebuilding becomes contested when heritage, governance, displacement, political control, and public memory shape the design agenda [8,19,37,38]. For this reason, the study does not treat reconstruction as a contractor-led repair program. It places local satisfaction, cultural continuity, environmental comfort, economic use, and resilience in one structure.

2.3. Community Satisfaction, Participation, and Social Sustainability

Social sustainability in urban reconstruction refers to the capacity of places to support equity, trust, participation, and well-being over time [14,15]. In post-conflict public spaces,

satisfaction is a useful measure because residents judge whether the rebuilt place is safe, accessible, culturally accepted, and useful for ordinary life. Participation studies show that community workshops, local knowledge, and environmental dialog can improve the fit between plans and real use [16–18]. In the Iraqi context, lower accessibility can arise not only from physical barriers such as uneven terrain, broken sidewalks, missing ramps, lack of tactile paving, inadequate restrooms, and weak transport links, but also from cultural barriers such as stigma toward disability, gendered patterns of public-space use, and limited confidence that authorities will respond to complaints. The framework therefore treats participation as a decision process in which residents' comments are translated into design actions and later reviewed through monitoring.

2.4. Cultural Heritage, Memory, and Identity

Cultural heritage in post-conflict cities is closely tied to public space because streets, markets, religious edges, and old building fragments can carry collective memory. Iraqi and regional studies show that place identity, heritage protection, and peace-oriented recovery must be handled carefully during post-war reconstruction [7–9]. Mosul's commercial streets are especially relevant because market activity, books, printing, walking, and cultural exchange are part of public memory [10,11]. Heritage research in other contexts also shows that culture-led regeneration can support continuity when it is based on local meaning rather than surface styling [19–21]. Cultural preservation in the framework therefore means repaired fragments, clear memory signs, careful facade choices, craft involvement, and events that keep people connected with the site.

2.5. Environmental and Economic Sustainability

Sustainability in post-conflict public space must be read through environmental, social, and economic pressures at the same time. Resilience and sustainable architecture studies connect long-term urban performance with adaptation, low-impact design, energy, materials, water, and climate-aware choices [22–24,28,39–45]. In Iraqi public spaces, shade trees, permeable paving, rainwater reuse, and low-energy lighting affect comfort, maintenance cost, and daily use under hot and dry conditions. Green space and health studies also connect planting, visual quality, leaf color, sound, and stress recovery, which gives a human reason for environmental design beyond technical targets [25–27,46]. Economic sustainability is equally central because public spaces often depend on markets, informal vendors, and small businesses that help communities judge whether recovery is working [47–49].

2.6. Need for a Framework for Iraq

The reviewed literature gives strong separate concepts, but Iraq still needs a clear framework that ties them together for public space reconstruction after conflict. UN-Habitat, Jayakody et al., and the World Bank show that recovery needs governance, technical capacity, funding, and public trust [12,13,50]. Carmona, Acik Etike and Erdonmez Dincer, and Mouratidis et al. show that satisfaction and well-being are shaped by design quality and access [3,14,15]. Almukhtar, Isakhan and Akbar, and Al-Harithy and Yassine show that heritage, identity, and peace are central in Iraqi and regional cases [7,8,19]. Ahern, Jabareen, and Kim et al. show that resilience needs iteration, flexibility, and monitoring [22,23,42].

The limitation of previous research is that these strands are rarely combined into an operational and satisfaction-led model for Iraqi public spaces. Existing work often discusses heritage, disaster recovery, urban design, or sustainability as separate themes, and it does not sufficiently explain how survey evidence can be translated into design priorities, governance duties, and measurable monitoring indicators. This gap is important because a place can be physically rebuilt and still fail if it remains inaccessible, culturally weak, economically inactive, environmentally uncomfortable, or disconnected from local

users. This paper therefore joins the literature themes through a five-pillar framework based on community engagement, cultural preservation, environmental stewardship, economic revitalization, and adaptive resilience (Table 1).

Table 1. Literature themes informing the framework.

Literature Theme	Main Issue for Post-Conflict Public Space	Framework Translation
Public space and publicness	Daily use, access, comfort, and belonging determine whether reconstruction is accepted.	Design must be checked through user satisfaction, accessibility, and visible maintenance.
Post-conflict recovery	Physical repair alone cannot answer fragmented governance, memory loss, and weak trust.	Reconstruction is treated as phased repair, social recovery, and long-term review.
Participation and satisfaction	Residents and experts see different problems, so both views are needed.	Surveys and local consultation feed the findings-to-framework matrix.
Cultural heritage	Public spaces carry memory through materials, facades, market culture, and local stories.	Heritage fragments, signs, craft work, and events become design actions.
Environmental sustainability	Heat, water scarcity, shade, planting, and materials affect daily use and maintenance.	Shade trees, permeable paving, water reuse, and low-energy services are core measures.
Economic recovery and resilience	Markets and small businesses need spaces that can adjust to changing recovery conditions.	Modular stalls, local funds, flexible furniture, and monitoring support continuity.

3. Research Methodology

3.1. Research Design

The study follows a convergent mixed-methods design because the research problem requires measurable satisfaction data and contextual interpretation of public space conditions. The quantitative part uses structured resident and expert Likert-scale surveys. The qualitative part uses literature evidence, site notes, case interpretation, figure-based case documentation, and framework construction. The two strands were collected and interpreted in parallel, then integrated during the findings-to-framework stage rather than treated as separate results.

Integration was carried out by linking each survey factor to literature themes, site-specific problems, framework pillars, implementation actions, and monitoring indicators. This approach was selected because public space reconstruction cannot be judged only by physical work; it also depends on whether residents and experts consider the spaces safe, accessible, culturally meaningful, environmentally comfortable, economically useful, and adaptable over time. Figure 1 presents the overall research methodology, and Table 2 summarizes the evidence sources and outputs used in the study.

3.2. Case Study Selection

The study uses two Iraqi case studies to compare different conflict effects on public-commercial spaces. Eskin Bazaar is located in the Saydawa district and represents a market-oriented public space where conflict-related economic pressure, degraded facilities, reduced activity, and limited visible repair have affected community satisfaction. Najafi Street is a historic street in Mosul associated with books, printing, walking, and cultural exchange; it represents a site where severe wartime destruction, heritage loss, and later reconstruction attention shaped public perception.

The two cases are comparable because both function as public-commercial streets that support daily movement, social interaction, small trade, and local identity. They are not treated as identical sites; rather, they are used as an analytical contrast between less visible

economic decline and direct physical war damage. This comparison helps test whether one framework can respond to different post-conflict recovery pathways while still using the same pillars of satisfaction, culture, environment, economy, and resilience.

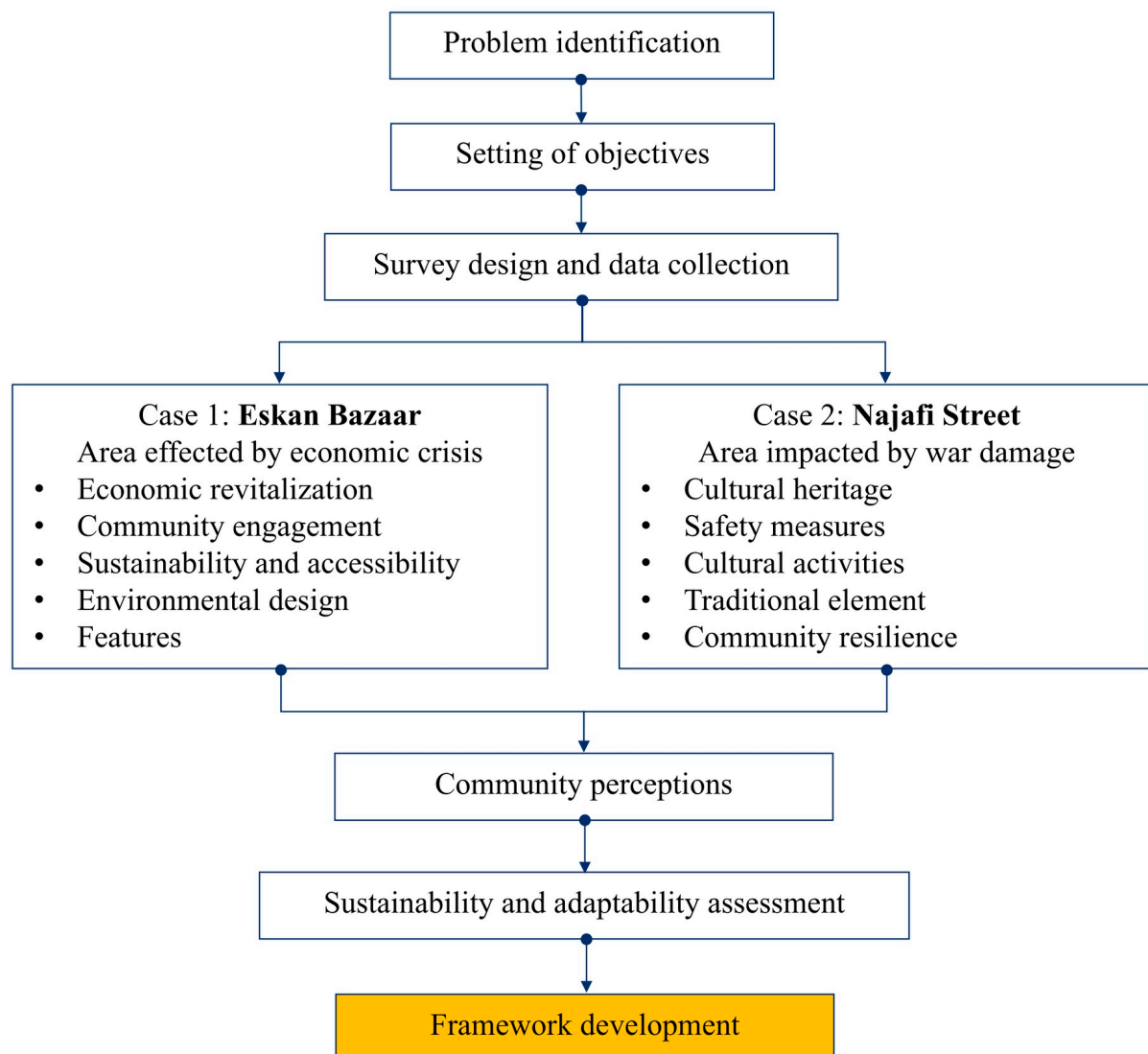


Figure 1. Research methodology of this study.

Table 2. Research design, evidence sources, and outputs.

Stage	Evidence Source	Analysis Action	Paper Output
Literature review	Public space, post-conflict recovery, sustainability, heritage, resilience, and participation studies	Group themes and identify the gap for Iraq	Framework concepts and literature table
Case reading	Eskin Bazaar and Najafi Street study material	Compare economic decline with direct war damage	Case contrast and figure citations
Resident survey	Local Likert responses from both sites	Count responses and calculate factor means	Survey data analysis and local comparison
Expert survey	Professional Likert responses from both sites	Count responses and compare technical judgment	Expert comparison and framework correction
Framework synthesis	Survey results, site evidence, the literature, SDG alignment, and stakeholder mapping	Translate findings into pillars, actions, and monitoring	Framework development tables and figures

Figure 2 locates Eskin Bazaar and identifies the selected site boundary, which explains the spatial scale used for resident and expert evaluation. Figure 3 places Najafi Street within the wider Mosul damage context; it is used to justify the selection of a case where visible destruction and cultural reconstruction pressures were stronger. The figures are therefore not decorative illustrations but case-selection evidence that supports the comparison logic in Table 3.

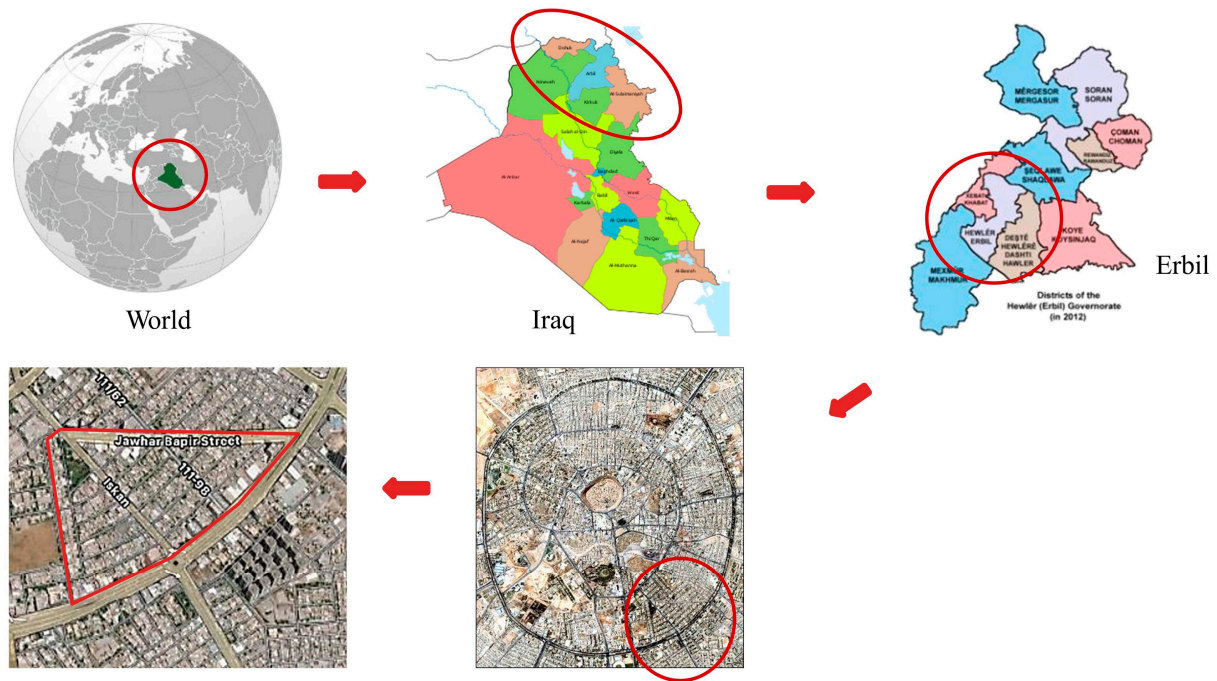


Figure 2. Location and dimensions of the Eskin site.

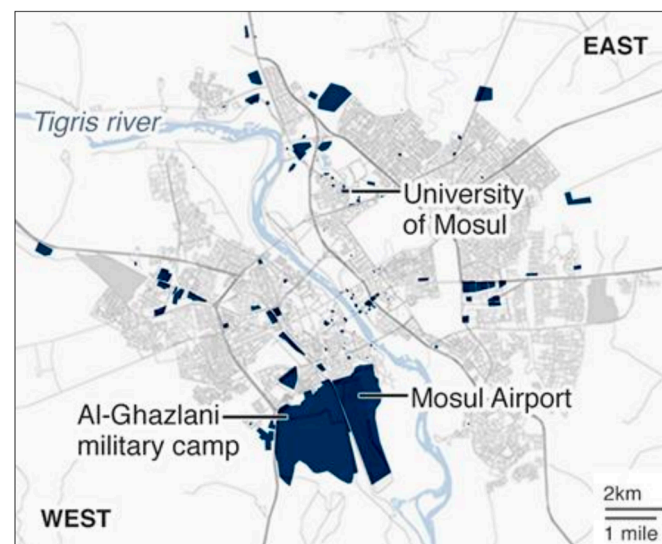


Figure 3. Building damage in Mosul from October 2016 to July 2017 [51].

3.3. Survey Instrument and Respondents

The survey instrument was developed to measure how local users and experts judged reconstructed public spaces. The local survey used five-point Likert-scale questions ranging from strongly disagree to strongly agree across community development, cultural preservation, sustainability, resilience, and accessibility. The expert survey used the same response scale but adjusted the wording toward professional concerns, including reconstruction

strategy, heritage, sustainability, resilience, safety, and accessibility. The items were derived from the literature review and the study aim, then checked for content alignment with the five framework dimensions before analysis.

Table 3. Case-study contrast and analytical role.

Case	Main Conflict Effect	Reason for Selection	Framework Test
Eskan Bazaar	Economic pressure, degraded public spaces, reduced activity, and limited visible repair	Represents places that may receive less priority because damage is not always dramatic	Tests how the framework handles neglected public space, market life, participation, and basic access
Najafi Street	Severe war damage, heritage loss, commercial disruption, and reconstruction pressure	Represents a historic Mosul street where destruction and identity are strongly linked	Tests how the framework handles cultural repair, stronger investment, safety, and visible recovery

Sampling was non-probability and site-based. Local respondents were reached through convenience/intercept sampling among residents, visitors, and regular users of the two public spaces. Expert respondents were selected purposively because of their professional or institutional relationship to architecture, planning, engineering, local authority work, or reconstruction practice. This sampling strategy is suitable for an exploratory framework-development study, but it also means that the results are interpreted descriptively rather than as statistically representative of all users in Iraq.

The study reports respondent records of 451 local participants for Eskan Bazaar and 450 for Najafi Street, with 48 expert respondent records for Eskan Bazaar and 41 for Najafi Street. Item-level valid counts were used in the statistical calculations because a small number of individual items were skipped. This explains why several count rows in the Appendices A and B may sum to one or a few responses less than the respondent-record total, including the Eskan Bazaar expert items Q5, Q18, and Q19. No missing response was replaced by imputation.

Reliability was checked before factor-level interpretation. Cronbach's Alpha evaluates internal consistency, meaning the extent to which items within a factor set measure a related construct. The local survey achieved alpha values of 0.79 for Eskan Bazaar and 0.91 for Najafi Street, which are interpreted as acceptable and excellent internal consistency respectively. Both expert surveys reported 0.93, indicating excellent internal consistency. These values support factor-level descriptive analysis, although they do not by themselves prove external validity or causal relationships.

3.4. Data Analysis and Framework Construction

The data analysis combined descriptive statistics, weighted means, standard deviations, medians, percentage agreement, site comparison, and interpretation against the literature. Survey responses were counted for each Likert value. Weighted means were used to summarize the central tendency of each factor, standard deviations were used to show dispersion, medians were added because Likert data are ordinal, and percentage agreement was calculated as the share of agree and strongly agree responses. The analysis is therefore descriptive and comparative; it does not claim causal proof that one reconstruction action directly produced one satisfaction score.

After the statistical reading, the findings were translated into the framework through a findings-to-framework matrix. Low or high factor scores were linked to specific design problems, framework pillars, site-specific actions, stakeholder responsibilities, SDG anchors, and monitoring indicators. The framework was then checked against both cases to confirm whether the same five pillars could address different recovery conditions without becoming too general.

3.5. Preliminary Framework Validation

The framework was preliminarily validated through four linked checks. First, construct reliability was tested using Cronbach's Alpha before factor-level interpretation. Second, the five pillars were triangulated against the literature review, case-study evidence, local survey results, and expert survey results. Third, local and expert findings were compared to identify convergent concerns, especially accessibility, cultural preservation, environmental comfort, and resilience. Fourth, the framework was applied back to the two cases through site-specific actions and monitoring indicators to test whether it could guide both economically affected and physically damaged public spaces. This is an analytical and preliminary validation, not a completed post-occupancy validation; full implementation testing remains a recommended future step.

3.6. Ethical Procedures and Study Limits

The study reports that ethical requirements for surveys at Cyprus International University were followed. Participants were informed about the purpose of the study, the voluntary nature of participation, and their right to withdraw. Data were anonymized so that individual respondents could not be identified. This point is sensitive in post-conflict research because participants may have personal memories of violence, displacement, property loss, or public insecurity. The survey questions therefore needed to remain respectful and focused on public space satisfaction rather than exposing private trauma. Cultural sensitivity was also required because public space use in Iraq is shaped by local customs, gender expectations, religious calendars, market routines, and authority relations. The study has limits that should be recognized. It focuses on two case studies, so the framework should be adjusted before it is applied in other Iraqi cities or other countries. The resident data are based on satisfaction and perception, which are useful but can be affected by recent events, expectations, and uneven access to information. The expert samples are smaller than the local samples, although they give a needed professional reading. The study also centers on public space reconstruction, sustainability, and resilience, while wider security logistics, macroeconomic modeling, and detailed cost estimation remain outside its main scope. These limits do not weaken the framework, but they show where future testing should extend the evidence.

4. Survey Data Analysis

The survey data were analyzed using item-level valid counts. To reduce manuscript length, the full response-count tables were retained only in Appendix B, while the main text uses a compact statistical table. Table 4 reports the weighted mean, standard deviation, median, and percentage agreement for each factor and respondent group. Agreement was calculated as the combined percentage of agree and strongly agree responses. The local results show that Najafi Street received higher mean scores than Eskan Bazaar in every factor. The strongest difference appears in cultural preservation (3.15 versus 2.71), while accessibility remains the weakest local dimension in both sites (2.57 for Najafi Street and 2.30 for Eskan Bazaar). The medians also show this weakness, with accessibility at 2.00 in both local cases.

The expert responses confirm the same general pattern. Experts rated Najafi Street higher than Eskan Bazaar in community development, cultural preservation, sustainability, resilience, and accessibility. The largest expert differences are in cultural preservation (3.28 versus 2.83) and accessibility (3.26 versus 2.94), which supports the interpretation that heritage visibility and access quality strongly influence professional assessment. The Eskan Bazaar expert sample contained 48 respondent records, but Q5, Q18, and Q19 each had

one skipped item; therefore, those item rows sum to 47 in the Appendices A and B and are treated using valid item-level denominators.

Table 4. Descriptive statistics calculated from the study survey count tables.

Survey Group	Factor	Valid Item n	Mean	SD	Median	Agreement (%)
Local, Esku Bazaar	Community development	3157	2.81	1.25	3.00	30.9
Local, Esku Bazaar	Cultural preservation	1353	2.71	1.29	3.00	27.8
Local, Esku Bazaar	Sustainability	2703	2.89	1.35	3.00	34.6
Local, Esku Bazaar	Resilience	3154	2.80	1.29	3.00	30.2
Local, Esku Bazaar	Accessibility	3151	2.30	1.38	2.00	21.4
Local, Najafi Street	Community development	3150	2.93	1.24	3.00	33.7
Local, Najafi Street	Cultural preservation	1350	3.15	1.15	3.00	38.4
Local, Najafi Street	Sustainability	2700	2.98	1.21	3.00	33.6
Local, Najafi Street	Resilience	3150	2.87	1.26	3.00	32.2
Local, Najafi Street	Accessibility	3150	2.57	1.19	2.00	23.4
Expert, Esku Bazaar	Community development	239	3.10	1.06	3.00	37.7
Expert, Esku Bazaar	Cultural preservation	96	2.83	1.10	3.00	27.1
Expert, Esku Bazaar	Sustainability	336	2.82	1.21	3.00	27.4
Expert, Esku Bazaar	Resilience	430	3.12	1.04	3.00	37.7
Expert, Esku Bazaar	Accessibility	96	2.94	1.13	3.00	32.3
Expert, Najafi Street	Community development	205	3.20	1.00	3.00	43.4
Expert, Najafi Street	Cultural preservation	82	3.28	1.22	3.00	48.8
Expert, Najafi Street	Sustainability	287	2.86	1.26	3.00	30.0
Expert, Najafi Street	Resilience	369	3.17	1.10	3.00	40.7
Expert, Najafi Street	Accessibility	82	3.26	1.22	3.00	42.7

The most important result is that stronger visible reconstruction attention is associated with higher satisfaction, but the descriptive design does not prove direct causality. The findings instead show a consistent pattern across local and expert data: Najafi Street performed better, while Esku Bazaar remained weaker in accessibility, cultural signaling, and public space quality. This supports the framework’s five-pillar structure and shows that funding and design priority should not be based only on visible structural damage.

5. Framework Development

The proposed framework is organized around five connected pillars: community engagement, cultural preservation, environmental stewardship, economic revitalization, and adaptive resilience. This structure comes directly from the survey factors, the literature review, and the case contrast. Community engagement answers the need for residents to influence design priorities. Cultural preservation answers the need to protect memory, street identity, and heritage fragments. Environmental stewardship answers heat, water, shade, and material conditions. Economic revitalization answers the role of markets, vendors, and small business return. Adaptive resilience answers uncertainty in funding, security, climate, and future use. What is specifically new for post-conflict Iraq is not the use of each pillar separately; it is the conversion of user and expert satisfaction evidence into a practical reconstruction sequence that treats visible war damage and less visible economic decline as equally relevant triggers for public-space priority. Figure 4 shows

the study framework development sequence, while Figure 5 shows the feedback relation among the five pillars. Table 5 gives a paper-level explanation of how each pillar connects evidence, action, and review measure.



Figure 4. Framework development for reconstructing public spaces in post-conflict Iraq.

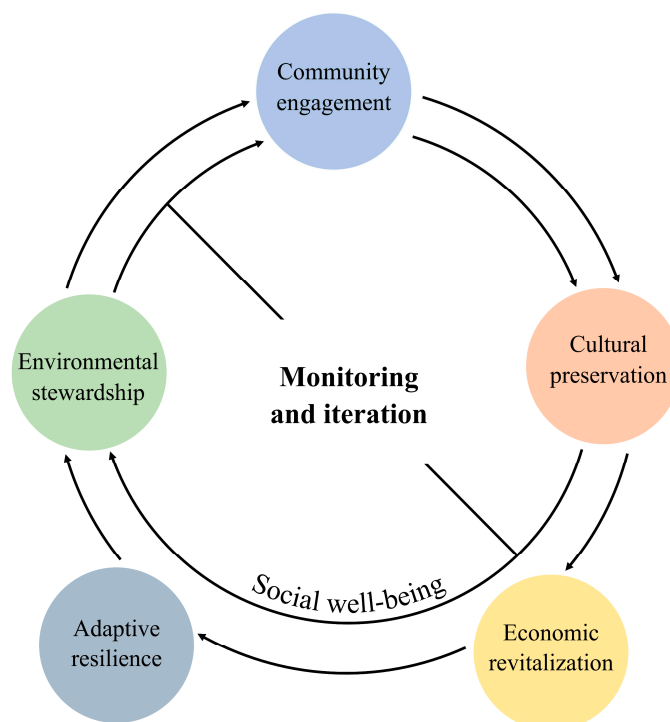


Figure 5. Systems diagram of interrelationships and feedback loops among the five pillars.

Table 5. Core framework pillars, evidence basis, actions, and review measures.

Pillar	Evidence Basis	Framework Action	Review Measure
Community engagement	Local scores show different satisfaction levels between the two sites, and literature links participation with acceptance.	Hold market-side workshops, short surveys, and visible response meetings before final design decisions.	Number of unique participants, recorded design changes from comments, and satisfaction after works.
Cultural preservation	Najafi Street scored higher where heritage repair was visible, while Eskin Bazaar showed weaker cultural signals.	Repair selected fragments, add memory signs, involve artisans, and connect public events with local identity.	Condition of heritage elements, resident recognition of cultural features, and event use.
Environmental stewardship	Both sites need stronger shade, water, comfort, and green measures under hot urban conditions.	Install native shade trees, permeable paving, water reuse points, and low-energy lighting.	Tree survival, shaded seating use, water use, and maintenance reports.
Economic revitalization	Both cases depend on trade, but Eskin Bazaar needs stronger market recovery and Najafi Street needs business return.	Provide modular stalls, planned vending zones, micro-grants, and local maintenance funds.	Stall occupancy, vendor income feedback, and market committee records.
Adaptive resilience	Post-conflict conditions can change through security, funding, climate, and return of displaced families.	Use movable benches, flexible event areas, phased works, and six-month review cycles.	Use pattern changes, event records, risk register updates, and corrective actions.

To reduce the risk that the framework remains only conceptual, the study adds a preliminary validation logic. The framework is validated internally by the reliability of the survey constructs, by convergence between local and expert findings, by correspondence with the literature themes, and by applying the same pillars back to both case studies. The validation shows that the framework can identify different starting priorities for Eskin Bazaar and Najafi Street while keeping the same evaluation structure. However, the validation remains preliminary because the framework has not yet been tested through full physical implementation and post-occupancy measurement.

The framework is not applied in the same way to both cases. Eskin Bazaar needs a route that starts with visible low-cost public space upgrades, market-side consultation, shade, accessibility, and small commercial support. Najafi Street needs a route that keeps heritage repair, pedestrian safety, cultural use, and commercial recovery together. Table 6 explains how the same framework changes across the two sites without losing its core structure. This is a central contribution of the paper because it avoids a rigid model. It allows different public spaces to enter the framework from the problem that is most urgent for them, while still requiring all five pillars to be checked.

The framework also requires governance and monitoring. Public agencies, community actors, technical partners, donors, market committees, and local leaders need different engagement levels based on their power and interest. Figure 6 and Table 7 present the stakeholder power-interest logic taken from the study. The implementation route also needs phases. Figure 7 presents the study roadmap with governance foundation, rapid local action, medium-term growth, advanced restoration and technology, and cross-cutting functions. Table 8 adds a monitoring and adaptation route for the paper, while Table 9 reproduces the study monitoring and evaluation framework. Figure 8 then shows how the framework aligns with SDG-related strategies. This connection matters because local public spaces can support inclusive cities, decent work, climate action, peace-oriented governance, and partnerships when design, management, and monitoring are joined.

Table 6. Site-specific application of the framework in the two cases.

Framework Issue	Eskan Bazaar Route	Najafi Street Route	Shared Output
Starting problem	Economic decline, weak public space quality, moderate satisfaction, and lower accessibility.	Severe destruction, heritage pressure, public reconstruction attention, and stronger satisfaction.	A site profile that defines which pillar needs early action.
Community engagement	Use market visits, informal discussions, and small plan posters near shops.	Use heritage walks, evening street reviews, and facade or signage mock-ups.	A record of local comments linked with design decisions.
Cultural preservation	Identify modest local stories, market identity, and visible fragments for interpretation.	Repair facade details, support book-street memory, and protect historic street identity.	A public memory layer in the design brief.
Environmental stewardship	Start with shade, seating comfort, waste points, and water-saving planting.	Connect shade, pedestrian repair, and heritage-sensitive materials.	A comfort plan that can be inspected and maintained.
Economic revitalization	Support small vendors through shaded modular stalls and scheduled markets.	Support bookstore, printing, and cultural commerce through safe pedestrian flow.	A market recovery plan tied to public space use.
Adaptive resilience	Use movable furniture and low-cost upgrades that can change with demand.	Use phased street repair, safety lighting, and event-ready public areas.	A review cycle that adjusts the site after use begins.

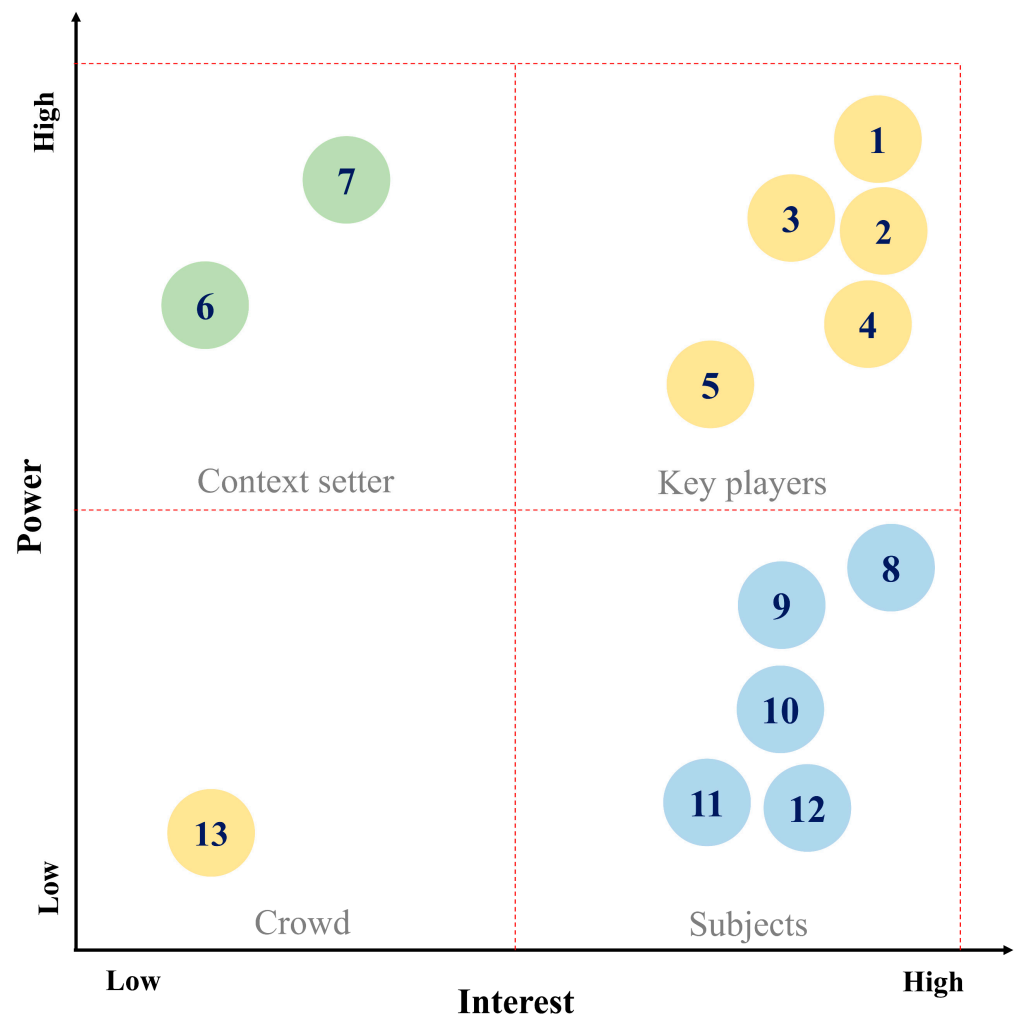
**Figure 6.** Visualization of stakeholder power-interest mapping.

Table 7. Stakeholder power-interest mapping.

No.	Stakeholder Group	Power Level	Interest Level	Engagement Approach
1	Ministry of Municipalities and Public Works	High	High	Regular coordination meetings and site visits
2	Provincial council	High	Medium	Quarterly briefings and joint site reviews
3	Municipal sub-district offices	Medium	High	Workshops and direct involvement in site surveys
4	International NGOs	High	Medium	Technical coordination and reporting
5	UN-Habitat	High	High	Regular coordination meetings and strategic reviews
6	Market committees	Medium	Medium	Advisory role in stall design and scheduling
7	Religious and tribal elders	Medium	High	Focus groups to discuss cultural elements
8	Neighborhood associations	Low	High	Community outreach and feedback sessions
9	Residents	Low	High	Community meetings and accessible grievance channels
10	Private engineering firms	Medium	Low	Periodic technical consultations
11	Local contractors	Low	Medium	Training sessions and capacity building
12	General public	Low	Low	Public notices and information boards

Table 8. Governance, implementation, and monitoring route for the framework.

Phase	Core Work	Responsible Actors	Decision Check	Evidence Recorded
Governance foundation	Create steering group, local liaison role, legal check, and budget route.	Municipality, ministry offices, local council, and project manager.	Roles are written and funding route is confirmed.	Meeting minutes, role list, budget note, and site boundary record.
Rapid local action	Clear space, install temporary shade, open workshops, and test modular stalls.	Municipal crew, community actors, market committee, and NGO partner.	Residents can see early change and give direct feedback.	Participation log, before-after photos, and quick satisfaction notes.
Medium-term works	Improve paving, lighting, access, planting, seating, and vendor areas.	Engineers, planners, contractors, market committee, and parks unit.	Works match the agreed framework pillars.	Inspection forms, stall occupancy, tree survival, and access checks.
Advanced restoration	Repair heritage details, add smart lighting or water systems, and train maintenance teams.	Culture ministry, artisans, university labs, contractors, and donors.	Technology and heritage work can be maintained locally.	Training records, heritage condition scores, and maintenance costs.
Long-term review	Run six-month review, update risk register, and change weak elements.	Steering group, community liaisons, municipal staff, and technical partners.	Problems are corrected before decline becomes visible.	KPI dashboard, action list, and revised work plan.

Table 9. Monitoring and evaluation framework.

KPI	Metric	Data Source	Frequency	Responsible Actor
Shade tree survival rate	Percentage alive after 12 months	Site inspection reports	Quarterly	Parks maintenance unit
Vendor stall occupancy	Percentage of occupied stalls	Market committee logs	Monthly	Market committee
Workshop participation	Number of unique participants	Registration sheets	Per workshop	Liaison officers
Heritage site condition	Condition score (1–5 scale)	Expert assessments	Semi-annual	Ministry of Culture team
Water usage	Liters per day per site	Sensor data	Daily	Technical partner

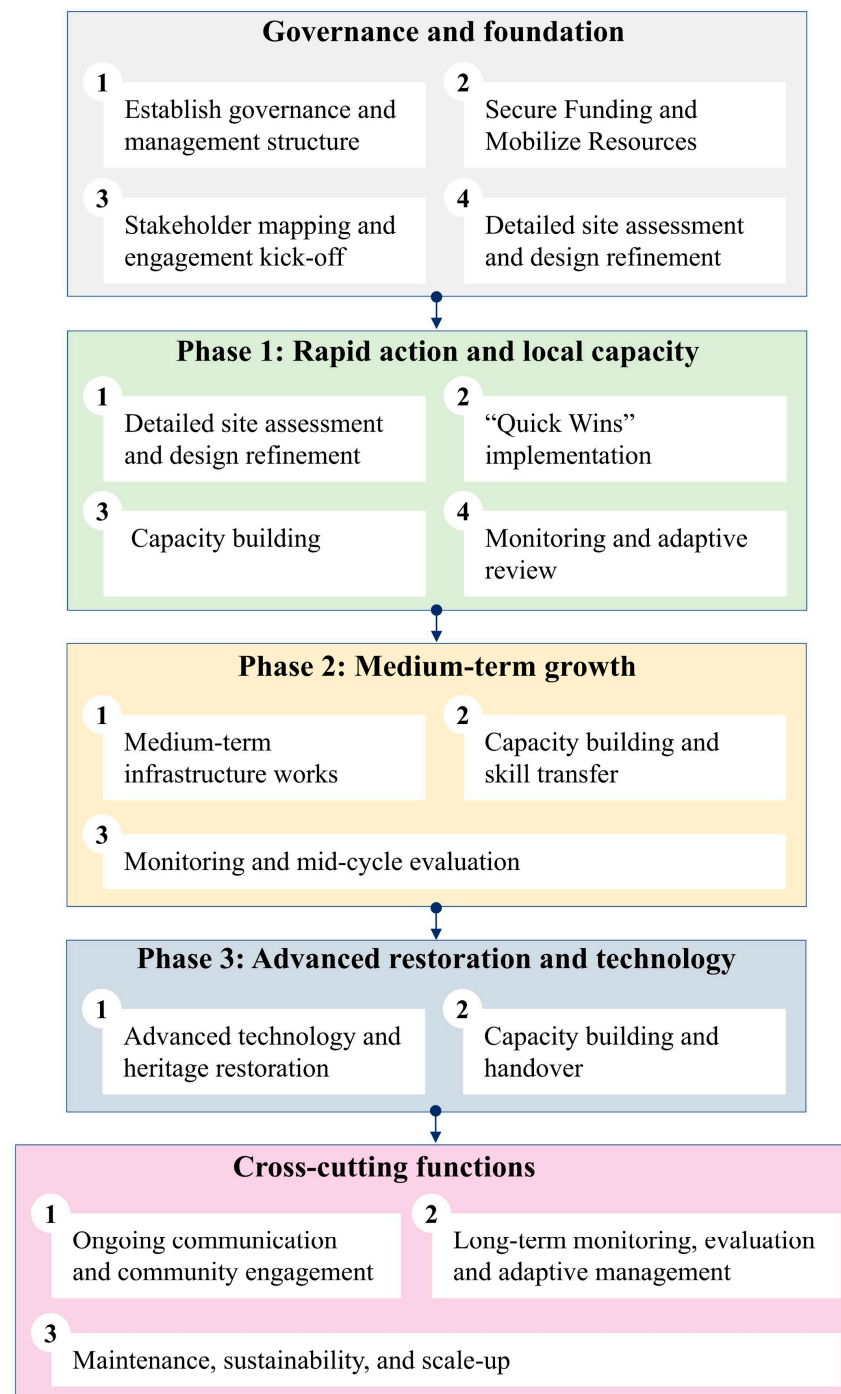


Figure 7. Implementation roadmap analysis.

The gap analysis in Table 10 shows that each pillar has a clear problem and a priority action. Community engagement needs mobile workshops and local radio because formal meetings may not reach enough residents. Cultural preservation needs plaques and restoration of masonry details because heritage fragments can remain invisible. Environmental stewardship needs shade trees and rainwater barrels because comfort is weak in hot public spaces. Economic revitalization needs modular shaded stalls because informal vending needs safer and more dignified space. Adaptive resilience needs movable benches and pop-up stages because fixed furniture cannot support events, emergencies, or changing community uses. These actions are small enough to be feasible but broad enough to start a longer recovery process.

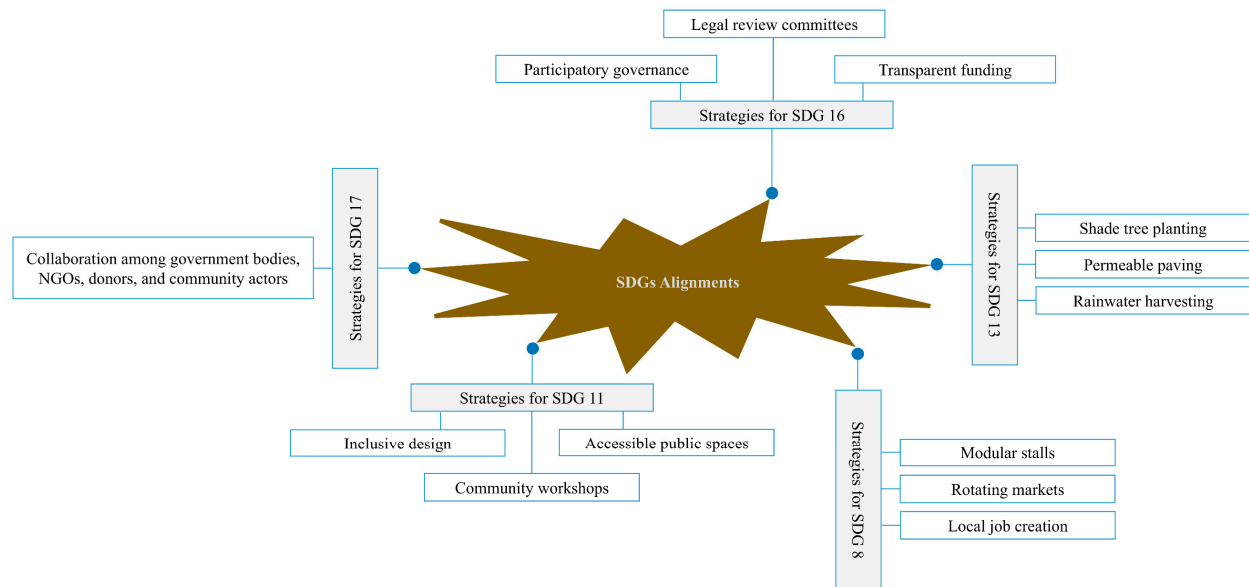


Figure 8. SDG alignment with framework strategies.

Table 10. Gaps and priority actions for each pillar.

Pillar	Identified Gap	Priority Action
Community Engagement	Limited workshop attendance in formal venues	Conduct mobile workshops in markets and use local radio spots
Cultural Preservation	Heritage fragments lack interpretation	Install explanatory plaques and restore masonry details
Environmental Stewardship	Absence of shade and water capture installations	Plant native shade trees and pilot rainwater barrels
Economic Revitalization	No dedicated vending infrastructure	Provide modular, shaded stalls on designated market days
Adaptive Resilience	Fixed seating limits space adaptability	Introduce lightweight, movable benches and pop-up stages

6. Discussion

The results show that public space reconstruction in post-conflict Iraq cannot be judged only through the amount of construction completed. The difference between Eskin Bazaar and Najafi Street shows that people respond to visible care, cultural repair, access, and comfort, not only to the fact that an area was rebuilt. Najafi Street scored higher in both local and expert readings. This pattern is likely associated with the stronger attention given to severe visible damage and heritage repair, rather than proof that damage alone caused higher satisfaction. This supports wider recovery literature that connects reconstruction with governance, identity, and public trust rather than physical repair alone [1,2,13]. Eskin Bazaar is equally important because it shows how places with less visible damage can still experience public-space decline, reduced activity, and lower satisfaction. This finding agrees with post-conflict planning studies that warn against narrow damage-based priorities [36,50].

The strongest gap in the local results appears in cultural preservation and accessibility. Najafi Street's higher cultural score suggests that residents value heritage repair when it is visible and linked with everyday use. This supports work on Iraqi place identity and heritage recovery, where cultural memory is part of urban confidence after conflict [7–9]. The accessibility finding is especially important because it was the weakest local factor in both sites. Ramps, continuous pedestrian routes, tactile paving, accessible toilets, shaded

resting points, readable signage, safe crossings, lighting, and seating for older users and people with limited mobility decide who can use a rebuilt space. Public space theory makes the same point, since publicness depends on actual access and use, not only on legal openness [3,5,6]. Inclusive design also requires cultural measures, including disability-aware community consultation, gender-sensitive participation times, and public feedback channels that reduce stigma and help vulnerable users report barriers. The framework therefore places accessibility within both design and monitoring.

The expert survey adds another layer. Experts rated Najafi Street more positively, but they also pointed toward technical gaps in Eski Bazaar, especially around sustainability, resilience, and integrated planning. Their view supports the need for environmental stewardship as a main pillar. Shade trees, water reuse, permeable paving, and low-energy lighting are not decorative features in Iraq. They are part of comfort, maintenance, and continued use under heat and water pressure. This agrees with sustainable architecture and resilience studies that link environmental design with long-term urban performance [22–24]. It also fits green space research that connects outdoor quality with health and stress recovery [25,26].

The proposed framework answers these findings through a joined structure. Community engagement creates the input route, cultural preservation protects identity, environmental stewardship improves comfort, economic revitalization supports livelihoods, and adaptive resilience keeps the place open to future change. The preliminary validation strengthens the framework by showing that it is supported by reliable survey constructs, the literature triangulation, expert-local comparison, and cross-case application. This arrangement adds to the literature by turning separate concepts into an applied sequence for Iraqi public spaces while still acknowledging that future post-occupancy evaluation is needed after implementation.

The comparison also changes how success should be reported. A project report that lists paving, lighting, or facade repair can miss whether older residents can sit comfortably, whether vendors can work without blocking movement, whether women and children feel safe, and whether cultural signs make sense to the people who live nearby. Satisfaction data therefore give a needed social reading beside technical completion data [14,15,17].

The policy meaning of the study is that damage visibility should not be the only basis for funding and design priority. Public authorities should add satisfaction, social vulnerability, heritage value, market function, access gaps, and environmental comfort to the selection criteria. Post-conflict Iraq also faces institutional barriers, including fragmented authority, bureaucracy, funding delays, insecurity, contractor interruptions, and unclear maintenance responsibility. The adaptive resilience pillar addresses these barriers by requiring a small steering group, written roles, phased budgets, a risk register, grievance channels, and six-month review meetings so that governance problems can be corrected before public-space decline returns. Monitoring is not an afterthought. Tree survival, stall occupancy, workshop participation, heritage condition, water use, and satisfaction checks can show whether the site is improving or falling back. This supports resilience research that treats adaptation and learning as part of the urban system [28,41,42]. The study therefore contributes a detailed and case-based framework that can guide reconstruction in Iraqi public spaces while still allowing local adjustment.

7. Conclusions

The study aimed to develop a framework for the architectural reconstruction of public spaces in post-conflict Iraq, focusing on user satisfaction toward sustainable community development and resilience. It addressed a literature gap where public space recovery is often discussed through physical repair, heritage, participation, or sustainability as

separate matters, while less attention is given to how these matters can be joined and tested through local and expert satisfaction in Iraqi case studies. The paper used Eskan Bazaar and Najafi Street to show that different conflict effects require different starting points, but they still need one clear framework that connects people, culture, environment, economy, and resilience. The study also showed that survey evidence can be translated into design decisions when the analysis is connected with site history, stakeholder roles, implementation phases, and clear review measures.

- Najafi Street received higher local and expert evaluations than Eskan Bazaar, a pattern associated with stronger reconstruction attention, clearer heritage repair, and more visible public improvements.
- Eskan Bazaar shows that economically damaged and less visibly destroyed areas still need serious public space support, especially for accessibility, market activity, shade, and community involvement.
- The five framework pillars, community engagement, cultural preservation, environmental stewardship, economic revitalization, and adaptive resilience, give a connected structure for translating survey findings into design and governance actions.
- The framework works best when stakeholder roles, phased implementation, and monitoring measures are defined from the beginning rather than added after design decisions are made.
- Public space reconstruction in post-conflict Iraq should be evaluated through user satisfaction, cultural continuity, comfort, access, local economic return, and the ability of the place to adjust over time.

The study is limited by its focus on two case studies, by non-probability sampling, and by reliance on perception-based survey data, even though these data are suitable for measuring satisfaction. The framework has been preliminarily validated through reliability checks, triangulation, expert-local comparison, cross-case application, and monitoring indicators, but it still requires external validation after implementation. Future research should test the framework in other Iraqi cities and in different types of public spaces, including parks, religious edges, transport nodes, and mixed-use streets. Future work should also add longer field observation, cost data, external expert-panel review, post-occupancy evaluation, and repeated satisfaction surveys one to two years after reconstruction works are completed. A later study can follow the same sites over several years to see whether satisfaction improves, declines, or changes after the first phase of reconstruction.

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Data Availability Statement: The original contributions presented in this study are included in the article. Further inquiries can be directed to the corresponding author.

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Appendix A. Adopted Survey Questions

Table A1. List of survey questions adopted for regular visitors and locals.

Factor	No.	Survey Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Community Development	1	The current condition of public spaces in your area meets the basic needs of the community.					
	2	I am satisfied with the accessibility of public spaces for all community members, including children, the elderly, and people with disabilities.					
	3	Public spaces in your area provide adequate opportunities for social interaction and community gatherings.					
	4	Community feedback and participation have been considered in the reconstruction of public spaces in your area.					
	5	The reconstruction of public spaces has positively impacted the local economy by providing opportunities for small businesses and markets.					
	6	Public spaces are designed to support local commerce (e.g., space for street vendors, local markets, events that boost business).					
	7	I believe that improving public spaces will continue to support the economic recovery and future growth of the area.					
Cultural Preservation	8	Public spaces in your area reflect the local culture and heritage through traditional architectural elements.					
	9	Local cultural landmarks and historical significance have been preserved in the reconstructed public spaces.					
	10	The design of public spaces allows for cultural events, festivals, and activities that promote local traditions and community cohesion.					
Sustainability	11	Public spaces in your area incorporate green spaces (e.g., parks, gardens) that contribute to environmental sustainability.					
	12	I believe that public spaces in my area are prepared to accommodate future technological advancements (e.g., smart technologies, energy-efficient systems).					
	13	There are visible efforts to implement environmentally sustainable practices (e.g., waste management, recycling, energy efficiency) in public spaces.					
	14	I believe that public spaces will continue to meet future environmental challenges, such as extreme weather and climate change.					
	15	Public spaces should integrate modern technology, such as free Wi-Fi, digital displays, and smart lighting.					
	16	There should be provisions for future technologies, such as electric vehicle charging stations and solar-powered amenities, in public spaces.					
Resilience	17	Public spaces in your area are safe to use, with adequate lighting, pedestrian pathways, and security measures.					
	18	Reconstructed public spaces are resilient and adaptable to potential future challenges, such as natural disasters or economic changes.					
	19	Public spaces are designed to be flexible, allowing them to adapt to different future needs (e.g., accommodating new community events or uses).					
	20	I am confident that public spaces in this area will remain functional and relevant as the community evolves.					
	21	I am satisfied with the quality of the reconstruction efforts for public spaces in my area.					

Table A1. *Cont.*

Factor	No.	Survey Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Resilience	22	I believe the reconstructed public spaces will contribute to a higher quality of life for residents, both now and in the future.					
	23	Improving public spaces will enhance community resilience, social cohesion, and economic vitality in the long term.					
Accessibility	24	The existing public spaces are well-maintained and provide a clean and pleasant environment.					
	25	Public spaces in your area provide adequate amenities such as seating, restrooms, and shade.					
	26	The public spaces in your area provide sufficient accessibility features (e.g., ramps, elevators, tactile paving) for people with disabilities.					
	27	Public restrooms in your area are accessible and adequately equipped for individuals with disabilities.					
	28	There is clear and visible signage, including braille and auditory cues, in public spaces to assist individuals with visual and hearing impairments.					
	29	The transportation infrastructure (e.g., public buses, sidewalks) in your area is designed to accommodate individuals with mobility challenges, including wheelchair users.					
	30	Public spaces provide adequate seating options and resting areas designed for people with disabilities and limited mobility.					

Table A2. List of survey questions adopted for experts.

Factor	No.	Survey Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Community Development	1	The current reconstruction strategies effectively address both the immediate and long-term needs of the community.					
	2	Community engagement and participation have been prioritized in the design and planning stages of public space reconstruction.					
	3	Public spaces are designed to accommodate local economic activities, such as markets, street vendors, and small businesses.					
	4	The reconstruction of public spaces has contributed to economic recovery in the region by creating spaces that support commerce and tourism.					
	5	The public space reconstruction projects have had a positive impact on the social cohesion and community resilience in this area.					
Cultural Preservation	6	Reconstruction efforts have successfully preserved local cultural heritage, landmarks, and historical significance in public spaces.					
	7	Public spaces are designed to reflect a balance between modern needs and the preservation of cultural identity.					
Sustainability	8	The reconstruction projects are adequately funded and resourced to ensure long-term sustainability of public spaces.					
	9	The reconstruction of public spaces has prioritized the inclusion of green infrastructure (e.g., parks, gardens, trees) to promote environmental sustainability.					
	10	Environmentally sustainable practices, such as water conservation, energy efficiency, and waste management, have been incorporated into the design of public spaces.					
	11	Public spaces include provisions for the integration of future technologies (e.g., electric vehicle charging stations, smart benches, digital displays).					

Table A2. *Cont.*

Factor	No.	Survey Question	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
Sustainability	12	Modern amenities such as free Wi-Fi, smart lighting, and digital infrastructure have been considered in the design of public spaces.					
	13	Additional steps to enhance the sustainability and resilience of public spaces are clearly outlined and feasible.					
	14	The integration of technology and smart infrastructure in the reconstruction of public spaces can be improved effectively.					
Resilience	15	The reconstructed public spaces are designed to be resilient against potential future conflicts, natural disasters, or economic shifts.					
	16	The flexibility of the design allows public spaces to adapt to changing community needs and future urban development trends.					
	17	The current public space reconstruction efforts are well-aligned with future population growth and urban development needs.					
	18	I believe that the reconstructed public spaces will remain functional and relevant as community demographics and needs change in the future.					
	19	Overall, the reconstruction efforts have been successful in promoting community satisfaction, sustainability, and resilience.					
	20	The primary challenges of maintaining the functionality and relevance of public spaces in the future are well-identified.					
	21	The reconstruction efforts have adequately addressed community needs and promote long-term resilience.					
	22	Lessons from this reconstruction project can be effectively applied to future public space developments in other conflict-affected regions.					
Accessibility	23	Future reconstruction efforts can be made more adaptable and better prepared to meet unforeseen challenges.					
	24	Safety features (e.g., lighting, security presence, pedestrian-friendly pathways) have been adequately integrated into the design of public spaces.					
	25	The current design of public spaces promotes a sense of safety and security, encouraging regular community use.					

Appendix B. Full Survey Response Counts

Note: The following tables report item-level valid response counts. The sample sizes in the methodology refer to respondent records, while individual item totals may be slightly lower where a respondent skipped a specific question. All means, standard deviations, medians, and agreement percentages in Table 4 were calculated using valid item-level denominators without imputation.

Table A3. Count analysis of the local response values for the local survey in Eskin Bazaar.

Factor	Question No.	Response Value	Response Value	Response Value	Response Value	Response Value
Factor	Question No.	1	2	3	4	5
Community Development	Q1	103	92	115	95	46
Community Development	Q2	116	139	93	73	30
Community Development	Q3	88	86	134	87	56
Community Development	Q4	97	121	131	73	29
Community Development	Q5	56	73	155	117	50
Community Development	Q6	66	106	123	101	55

Table A3. *Cont.*

Factor	Question No.	Response Value	Response Value	Response Value	Response Value	Response Value
Factor	Question No.	1	2	3	4	5
Community Development	Q7	64	108	117	98	64
Cultural Preservation	Q8	88	112	143	79	29
Cultural Preservation	Q9	99	112	102	81	57
Cultural Preservation	Q10	115	98	108	65	65
Sustainability	Q11	129	100	118	60	44
Sustainability	Q12	121	118	100	69	43
Sustainability	Q13	119	99	117	72	44
Sustainability	Q14	56	91	130	106	68
Sustainability	Q15	53	72	94	116	114
Sustainability	Q16	78	54	119	101	98
Resilience	Q17	116	107	134	60	34
Resilience	Q18	85	132	126	63	45
Resilience	Q19	92	116	128	78	37
Resilience	Q20	70	79	118	99	83
Resilience	Q21	119	110	106	63	52
Resilience	Q22	84	86	109	95	77
Resilience	Q23	46	120	117	101	67
Accessibility	Q24	121	103	117	67	43
Accessibility	Q25	159	127	62	43	59
Accessibility	Q26	203	92	73	42	41
Accessibility	Q27	202	97	58	38	52
Accessibility	Q28	184	98	73	40	55
Accessibility	Q29	192	96	60	45	58
Accessibility	Q30	204	84	71	38	54

Table A4. Count analysis of the local response values for the local survey in Najafi Street.

Factor	Question No.	Response Value	Response Value	Response Value	Response Value	Response Value
Factor	Question No.	1	2	3	4	5
Community Development	Q1	121	129	97	72	31
Community Development	Q2	46	156	112	88	48
Community Development	Q3	60	129	117	81	63
Community Development	Q4	59	138	110	80	63
Community Development	Q5	56	113	115	108	58
Community Development	Q6	58	129	129	85	49
Community Development	Q7	17	68	129	127	109
Cultural Preservation	Q8	25	109	124	128	64
Cultural Preservation	Q9	19	112	137	102	80
Cultural Preservation	Q10	45	123	137	88	57
Sustainability	Q11	64	156	114	86	30
Sustainability	Q12	39	147	135	80	49
Sustainability	Q13	79	141	133	60	37
Sustainability	Q14	76	136	142	63	33
Sustainability	Q15	19	87	107	129	108
Sustainability	Q16	21	66	130	114	119

Table A4. Cont.

Factor	Question No.	Response Value	Response Value	Response Value	Response Value	Response Value
Factor	Question No.	1	2	3	4	5
Resilience	Q17	67	106	139	99	39
Resilience	Q18	105	137	109	79	20
Resilience	Q19	69	107	151	88	35
Resilience	Q20	87	150	88	85	40
Resilience	Q21	138	117	88	60	47
Resilience	Q22	19	94	126	118	93
Resilience	Q23	25	89	124	90	122
Accessibility	Q24	33	97	154	127	39
Accessibility	Q25	91	141	97	77	44
Accessibility	Q26	82	177	103	70	18
Accessibility	Q27	104	171	107	44	24
Accessibility	Q28	126	127	90	77	30
Accessibility	Q29	74	165	108	64	39
Accessibility	Q30	134	163	68	45	40

Table A5. Count analysis of the expert response values for the expert survey in Eskan Bazaar.

Factor	Question No.	Response Value	Response Value	Response Value	Response Value	Response Value
Factor	Question No.	1	2	3	4	5
Community Development	Q1	5	7	21	12	3
Community Development	Q2	6	10	19	12	1
Community Development	Q3	4	7	18	14	5
Community Development	Q4	3	4	20	17	4
Community Development	Q5	4	12	9	18	4
Cultural Preservation	Q6	4	17	12	11	4
Cultural Preservation	Q7	5	15	17	7	4
Sustainability	Q8	6	16	15	7	4
Sustainability	Q9	8	13	13	7	7
Sustainability	Q10	8	18	12	8	2
Sustainability	Q11	12	11	14	4	7
Sustainability	Q12	8	16	11	7	6
Sustainability	Q13	3	13	20	6	6
Sustainability	Q14	3	8	16	13	8
Resilience	Q15	4	13	19	5	7
Resilience	Q16	3	12	17	14	2
Resilience	Q17	5	14	14	12	3
Resilience	Q18	2	4	18	14	9
Resilience	Q19	1	14	17	12	3
Resilience	Q20	4	13	16	14	1
Resilience	Q21	2	14	17	11	4
Resilience	Q22	1	9	16	20	2
Resilience	Q23	2	6	11	23	6
Accessibility	Q24	7	16	14	8	3
Accessibility	Q25	2	12	14	14	6

Table A6. Count analysis of the expert response values for the expert survey in Najafi Street.

Factor	Question No.	Response Value	Response Value	Response Value	Response Value	Response Value
Factor	Question No.	1	2	3	4	5
Community Development	Q1	4	10	15	10	2
Community Development	Q2	2	11	14	11	3
Community Development	Q3	2	3	11	23	2
Community Development	Q4	2	10	9	19	1
Community Development	Q5	1	5	17	13	5
Cultural Preservation	Q6	6	3	12	14	6
Cultural Preservation	Q7	3	9	9	13	7
Sustainability	Q8	5	12	14	5	5
Sustainability	Q9	5	13	9	7	7
Sustainability	Q10	9	10	10	8	4
Sustainability	Q11	10	11	11	4	5
Sustainability	Q12	11	8	14	5	3
Sustainability	Q13	4	11	12	12	2
Sustainability	Q14	4	3	15	8	11
Resilience	Q15	3	14	15	6	3
Resilience	Q16	4	9	12	12	4
Resilience	Q17	3	8	10	15	5
Resilience	Q18	4	3	17	13	4
Resilience	Q19	5	8	14	11	3
Resilience	Q20	1	9	15	11	5
Resilience	Q21	4	12	13	10	2
Resilience	Q22	2	6	9	16	8
Resilience	Q23	2	4	13	16	6
Accessibility	Q24	3	10	14	7	7
Accessibility	Q25	3	8	9	12	9

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