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Social transformations and urban vitality in Farahzad River Valley and Nahj al-Balaghah Park, Tehran*

Mohammad Mahdi Poorhasan Mehrzanjani[1], Hossein Azarnivand[2], Arash Malekian[2]**

1. M.Sc. Graduate, Department of Reclamation of Arid and Mountainous Regions, Faculty of Natural Resources, University of Tehran. Karaj, Iran
2. Professor, Department of Reclamation of Arid and Mountainous Regions, Faculty of Natural Resources, University of Tehran. Karaj, Iran

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Abstract

Urban river valleys in Tehran, particularly the Farahzad River, have faced environmental, social, and cultural challenges in recent decades. However, their rehabilitation has created significant potential for revitalizing social life and enhancing urban vitality. This study examines the effects of socio-cultural rehabilitation on the social dimensions of urban vitality in these spaces. The research is applied in purpose and descriptive-analytical in nature, using a mixed quantitative-qualitative approach within a case study framework. Data were collected through library research, urban documents, field observations, and a researcher-developed questionnaire. The statistical population consisted of 30 experts, including faculty members and urban managers. The questionnaire consisted of 24 items concerning physical, social, and cultural-recreational dimensions. Its validity was confirmed through expert judgment, and its reliability was verified with a Cronbach's alpha of 0.70. The data were analyzed using indicator ranking and SWOT analysis. The findings suggested that rehabilitation had a positive effect on urban vitality by increasing social presence, improving environmental perception, strengthening social interactions, and fostering an initial sense of place attachment. The strongest impact was observed in environmental liveliness. However, social insecurity, destructive behaviors, lack of amenities, and weak coherence in cultural programs have limited the sustainability of this vitality. Therefore, sustainable urban vitality in these spaces requires the integration of physical interventions with social management, enhanced security, improved welfare services, and participatory cultural planning.

Keywords

Farahzad River Valley
Nahj al-Balagha Park
restoration
socio-cultural
urban vitality

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** Corresponding Author: malekian@ut.ac.ir

1. Introduction

Tehran, as the capital and most populous city in Iran, has faced complex environmental and social challenges within its urban river valleys in recent decades. River valleys, which once played a significant ecological and social role in shaping open spaces and connecting humans with nature, have transformed into dysfunctional, vulnerable, and sometimes unsafe areas due to unbalanced urban development, destruction of gardens and green spaces, channelization of water flow, and weak urban oversight. For instance, before its redevelopment, parts of the Farahzad River Valley had become a gathering place for the homeless, a site for drug consumption and trafficking, and a dumping ground for waste. The lack of proper pathways and adequate lighting severely limited citizens' presence and social activities. This situation not only degraded the river valley's environmental quality but also weakened citizens' lived experiences and social interactions. Social and cultural limitations, including the absence of recreational, sports, and cultural spaces, weak infrastructure, and unsafe pathways, reduce opportunities for citizen participation and social interactions. Despite their natural and historical potential, these areas often fail to achieve a level of urban vitality that enhances the quality of life, fosters social interactions, and cultivates a sense of place. This situation highlights the need for scientific and rigorous research to identify potential and limitations, as well as to assess the impact of revitalization interventions.

"Vitality" in urban studies is considered a fundamental indicator of spatial quality, reflecting the environment's ability to respond to citizens' psychological, social, and cultural needs (Lynch, 1998; Jalaladdin & Oktay, 2012). In urban literature, the concept of vitality is equated with the term "vitality" and signifies the diversity, dynamism, and richness of human activities in the urban space; it is a multi-dimensional concept encompassing physical, cultural, social, economic, historical, and environmental dimensions, stemming from citizens' lived experiences. In Persian, this term is defined as synonymous with liveliness, happiness, and dynamism (Shahbazi et al., 2020). Urban vitality is not merely an individual feeling but the result of synergy between the physical structure, diversity of uses, active presence of social groups, and the quality of spatial design, enabling active presence, cultural interaction, the formation of a sense of belonging, and meaningful social behaviors. Urban vitality can be defined as a dynamic capacity that reflects the urban environment's ability to meet the needs, activities, and interactions of the citizens. Just as in health studies, the WHO's concept of "Vitality Capacity" has been introduced as "the combination of all physical and mental capacities that an individual can draw upon at any given time," urban vitality is also a function of the interaction between physical structure, infrastructure, social and cultural activities, and the quality of user experience. This multidimensional capacity includes three main aspects: Physical (quality of pathways, green spaces, and landscape design), social (diversity of activities, citizen presence, and social interactions), and cultural-recreational (cultural, recreational, and educational activities). Urban vitality can be enhanced through landscape design interventions and the revitalization of natural-cultural environments, such as river valleys, thereby facilitating active presence, social interaction, and the formation of a sense of place. In other words, urban vitality is the environment's capacity for resilience, responsiveness, and enhancement of the socio-cultural ecosystem, and its monitoring and evaluation can be achieved through behavioral, experiential, and emotional indicators (Bautmans et al., 2022).

In this context, Nahj al-Balaghah Park and the Farahzad River Valley, as an ecological-cultural green corridor, possess significant potential for enhancing the quality of the urban ecosystem and strengthening citizens' social presence and participation. By creating identity-rich spaces and a platform for social interaction, these areas can help mitigate urban problems and enhance the social-cultural function of the region (Farsi et al., 2022). In recent years, the Farahzad River Valley and Nahj al-Balaghah Park have undergone urban organization and revitalization efforts; these actions, beyond ecological restoration, also encompass cultural and social dimensions, creating new grounds for increased social interactions. However, it remains unclear to what extent these interventions have been effective across multiple dimensions, particularly in terms of social aspects of urban vitality, including strengthening citizen presence, increasing social interactions, and fostering a sense of place. Examining these areas as case studies can reveal how river valley revitalization impacts urban vitality and what potential for sustainable development they hold. This research, focusing on the socio-cultural dimensions of revitalization, aims to explain the mechanism by which these interventions influence urban vitality. Therefore, assessing the social and cultural consequences of revitalization actions is essential to determine whether

the designs and measures taken have been effective in enhancing urban vitality by improving presence, diversity of activity, and social interactions. Consequently, the main research question is redefined as: Through what means and to what extent has the revitalization of urban river valleys in Farahzad and Nahj al-Balaghah Park influenced the realization of various dimensions of urban vitality?

2. Theoretical and empirical background

2.1. Domestic experiences

Alehashemi (2011) examined the Farahzad River Valley in Tehran as an example of urban ecological spaces in a descriptive-analytical master's thesis, relying on library studies and field surveys. The research emphasized the natural, social, and environmental potential of this area for transforming into an urban green infrastructure and enhancing the vitality of urban spaces. Findings indicated that sustainable landscape design can improve environmental quality, social interactions, and imbue the urban fabric with identity, recreating the human-nature connection. Karimi Moshaver (2013), using an analytical-documentary approach, analyzed the position of Tehran's river valleys in urban documents and comprehensive plans, selecting the Farahzad River Valley as a case study. Results showed that despite possessing environmental potential and key elements, such as green space and water flow, these river valleys have been overlooked in urban planning, and the organization's projects have lacked a human-centered and creative approach. The study identified opportunities and threats and proposed strategies for enhancing social interactions and citizen presence in river valley spaces, emphasizing the need to integrate natural and human capacities through the creation of pedestrian axes connected to the city. Foroudi (2016) conducted a descriptive-analytical master's thesis using SWOT analysis (strengths, weaknesses, opportunities, threats) to test the participatory model (NBN: Neighbors Building Neighborhoods) in the Farahzad neighborhood of Tehran. Previously implemented in various cities worldwide, this model was employed to decentralize top-down management and strengthen citizen participation. Findings indicated that the participatory model can enhance the sense of place, empower residents, and foster active citizen presence in urban spaces, suggesting its applicability to other Iranian cities as a model for improving social participation in urban management. The use of green infrastructure in cities can enhance environmental quality and increase the desirability of urban spaces. Moghbel et al. (2017) demonstrated that green roofs, by improving urban microclimate conditions and reducing temperature and pollutants, can play an effective role in enhancing environmental quality and urban vitality. Karimi et al. (2017) conducted a descriptive-analytical and correlational study to evaluate the impact of urban river valley regeneration on tourism development, using the Farahzad River Valley as a case study. Data were collected through library studies, field observations, and questionnaires administered to 373 tourists. Analyses using SPSS software revealed that the regeneration of the Farahzad River Valley led to increased public presence and strengthened social and cultural interactions; however, the goals of sustainable tourism development were not fully achieved. The research emphasized the importance of planning these spaces as green and recreational areas to enhance social interactions, the local economy, and environmental conservation. Sadreazam Nouri et al. (2021), using tools such as urban river survey (URS), geographic information system (GIS), SWOT analysis, quantitative strategic planning matrix (QSPM), and analytical hierarchy process (AHP), examined the environmental, social, spatial, and economic dimensions of the Farahzad River Valley. The results led to the extraction of 12 key strategies, including the expansion of recreational areas, the connection of green spaces to surrounding parks, and the enhancement of citizen accessibility and presence. This research indicated that multi-dimensional and holistic decision-making can be an effective tool for managing river valleys and achieving sustainable urban development. In planning for urban river valley regeneration, understanding natural hazards, especially floods, is crucial. In this regard, Ghadimi et al. (2022) analyzed the morphometric parameters of the Kan watershed, demonstrating that morphotopographic and climatic features significantly influence the flood potential of sub-basins. This understanding can be effective in the sustainable management and safe regeneration of urban river valleys. Urban sprawl is one of the factors threatening natural spaces on the city's outskirts, including river valleys. In this context, Keyani and Ghadimi (2024) demonstrated that the horizontal expansion of cities leads to the destruction of surrounding natural lands, highlighting the need to manage urban development and protect valuable natural spaces in the urban planning process. Hosseini et al. (2025) conducted an analytical-documentary and field study to examine the

physical and social transformations of the Farahzad neighborhood in Tehran. Data were collected through urban management documents, GIS images, and interviews with local experts. The results indicated that the development of this area has been largely unplanned, and there is a need to identify urban fabric patterns and landscape designs to enhance social and environmental vitality. In summary of recent studies, new approaches in urban natural space planning and design emphasize the necessity of integrating environmental, social, and management dimensions in the regeneration and development process of these spaces. In this regard, Poorhasan Mehrzanjani et al. (2026) highlighted that current research is increasingly moving towards providing operational frameworks and practical strategies for sustainable natural resource management, as demonstrated in their study on water governance in Iran. Furthermore, Poorhasan Mehrzanjani et al. (2026) stated in their study on the Kan River Valley regeneration that enhancing collective identity in urban natural spaces requires simultaneous attention to the physical, activity-based, and semantic dimensions of space, fostering a connection between nature and social interactions. Additionally, Zandi Babaei and Poorhasan Mehrzanjani (2026) showed that the biophilic landscape design approach can enhance the presence and vitality of urban green spaces by strengthening ecological functions and improving the perceptual quality of the space. Therefore, simultaneous attention to environmental, social, and perceptual dimensions in the regeneration process of urban river valleys, including the Farahzad axis and Nahj al-Balaghah Park, can play a significant role in enhancing urban vitality.

2.2. International experiences

Yazici et al. (2017) evaluated the potential for rural tourism and ecotourism in Başkale, Turkey, using SWOT analysis. The results indicated that pristine natural landscapes, biodiversity, and rich cultural heritage have high potential for enhancing social interactions and local vitality; however, weaknesses such as a lack of infrastructure and public awareness hinder effective utilization. This study offered a model for strategic tourism planning within a river valley context, with a socio-cultural approach. Foppoli (2018) examined the role of cultural heritage in regional sustainable development in a book on the Valtellina Cultural District in Northern Italy along the Adda River Valley. A project named “Route of terraces,” by connecting local people to the cultural landscape, created a link between historical identity, social participation, and sustainable tourism, increasing the sense of belonging and social interaction along the river valley. SWOT analysis identified strengths, such as rich heritage and inter-institutional participation, and threats, including economic pressure and erosion of local identity. This study provided a model for participatory planning centered on cultural heritage and social resilience. Çalik et al. (2023) identified the tangible and intangible cultural heritage potentials of the Yanbolu-Santa River Valley–Santa River Basin in Turkey and transformed the river valley spaces into a cultural-ecological tourism destination through conservation strategies and local community participation. The results showed that the presence of historical buildings and registered neighborhoods holds significant value, but the lack of infrastructure and promotion poses a serious threat. Singtuen and Gałka (2024) conducted a comprehensive study on the Chi River Basin in Thailand, using participatory action research (PAR) and asset-based community development (ABCD) methods to leverage natural and cultural assets for enhancing social participation, environmental conservation, and strengthening cultural identity. Findings indicated that natural elements, such as rivers and lakes, play a crucial role in shaping traditions and cultural identity. The designed creative tourism model aimed to increase community income, protect the environment, and strengthen cultural identity. Prakash (2025) examined the impacts of the Polavaram Dam on the Godavari River Valley in India in a landscape archaeology study. The results indicated that the dam construction led to the submergence of human settlements and the reduction of cultural artifacts. Emphasizing the interaction between nature and culture, the study highlighted the necessity of protecting tangible and intangible heritage in riverine and marine landscapes and presented a conceptual model for understanding the effects of water projects on cultural heritage.

2.3. Synthesis of background and conceptual model of the research: The impact of river valley revitalization on urban vitality

Based on the synthesis of domestic and international experiences examined, a conceptual framework can be presented to explain the relationship between river valley revitalization and the enhancement of urban vitality. In this framework, river valley revitalization and design/technical interventions are considered independent variables that influence urban vitality

through improving the physical, social, and cultural qualities of the space. Revitalization actions include ecological restoration, strengthening green infrastructure, organizing pedestrian pathways, increasing accessibility, providing spaces for rest, and cultural-recreational activities. These interventions, on the physical dimension, enhance landscape quality, readability, and spatial safety; on the social dimension, they lead to increased citizen presence, activity diversity, and social interactions; and on the cultural-recreational dimension, they foster a sense of belonging by activating events, preserving heritage, and strengthening place identity. Ultimately, the outcome of these three dimensions leads to the formation of a dynamic, accessible, and meaningful environment, referred to as urban vitality, which is a function of the aforementioned elements and can be considered the dependent variable. This conceptual model forms the theoretical framework for the present research and serves as the basis for analyzing and evaluating the impact of revitalization interventions in the studied river valley (Figure 1).

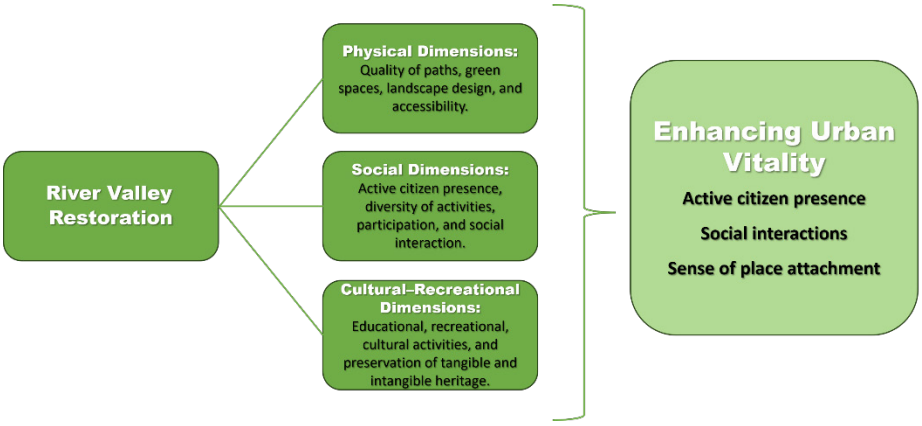

Figure 1. Conceptual model of the research

Despite numerous domestic and international studies on river valleys and urban vitality, existing research primarily focuses on theoretical aspects or partial evaluations. Few studies have provided an integrated analysis of the impact of revitalization and landscape design interventions on urban vitality, social interactions, and citizen presence in actual urban areas of Iran. This research, by combining quantitative and qualitative approaches, a case study, and the use of data from field surveys and the perspectives of experts and urban managers, aims to fill this gap and apply the presented conceptual framework to analyze and evaluate the impacts of revitalizing the Farahzad River Valley and Nahj al-Balaghah Park.

3. Methodology

3.1 Research type and approach

This research is applied in purpose and descriptive-analytical in nature, conducted with a mixed-methods approach and emphasizing a case study. The research framework is based on the premise that revitalization interventions and landscape design in urban river valleys can influence urban vitality through physical, social, and cultural-recreational dimensions. Therefore, the conceptual model derived from the theoretical foundations served as the basis for designing data collection tools, categorizing indicators, and analyzing research findings. The study area includes the Farahzad River Valley and Nahj al-Balaghah Park in Tehran, selected as a prominent example of urban river valley revitalization.

3.2. Operationalization of the research conceptual model

To translate the theoretical framework into measurable indicators, the main dimensions of the conceptual model, including the physical, social, and cultural-recreational dimensions, were operationalized into specific components and items. This enabled a systematic evaluation of the impact of revitalization and landscape design interventions on the level of urban vitality in the study area. Table 1 shows how the dimensions of the research conceptual model were operationalized.

Table 1. Operationalization of the research conceptual model's dimensions

Indicator/sample item	Component	Dimension
Improving the visual and natural quality of the space	Landscape quality	Physical
Ease of access and movement in the space	Accessibility	Physical
Path security, lighting, and amenities	Safety & comfort	Physical
Increasing citizen presence in the space	Sociability (presence)	Social
Strengthening social connections and interactions	Social interaction	Social
Possibility of performing diverse individual and group activities	Activity diversity	Social
Strengthening the sense of belonging and meaning in the space	Place identity	Cultural-recreational
The space's capacity to host or experience cultural activities	Cultural activities	Cultural-recreational
Enhancing the quality of spending leisure time	Leisure time	Cultural-recreational

3.3. Study population, sample, and sampling method

The research population consisted of academic experts in urban planning, environment, and natural resources, as well as relevant urban management officials involved in river valley revitalization. Given the specialized nature of the topic and the limited population of experts, non-random, purposive (judgmental) sampling was employed. Selection criteria included relevant expertise, practical or research experience in urban river valley revitalization, and direct familiarity with the study area. Accordingly, 30 individuals were selected as the sample, comprising 10 faculty members from the University of Tehran in the fields of Natural Resources, Geography, and Agriculture, and 20 urban managers related to the cultural-social revitalization of river valleys. This composition allowed the research to benefit from both scientific/academic viewpoints, as well as practical/managerial experiences in evaluating the impacts of river valley revitalization (Figure 2).

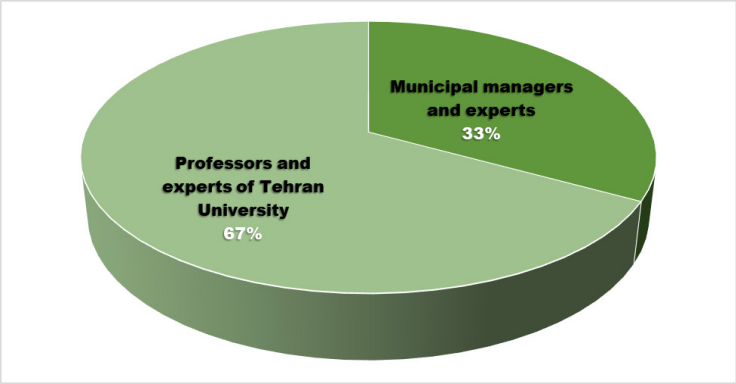

Figure 2. Composition of the study population and sample

Data collection in this research was conducted in two phases. The first phase involved library studies, where theoretical sources, scientific articles, documents, and urban plans related to river valley revitalization, urban vitality, and landscape design were reviewed. The second phase involved field studies, including observational visits to the study area and the distribution of a specialized questionnaire among experts. The primary tool for collecting field data was a researcher-developed questionnaire comprising 24 items. These items were designed based on indicators extracted from the theoretical literature, previous experiences in urban river valley revitalization, and the specific characteristics of the study area. The items covered the three dimensions of physical, social, and cultural-recreational aspects. Responses were coded on a five-point Likert scale, ranging from "very low importance" (score 1) to "very high importance" (score 5).

To ensure the validity of the tool, the content validity of the questionnaire was reviewed and confirmed by obtaining the opinions of relevant experts. To assess

the reliability of the questionnaire, Cronbach's alpha coefficient was used. The average correlation between items was calculated as 0.08, and with 24 items, the Cronbach's alpha value was 0.70, indicating acceptable reliability for the research tool.

3.4. Data analysis method

In the data analysis phase, descriptive statistics, including mean and rankings of items, were used to evaluate the impact of revitalization interventions in each of the three dimensions of the research. To provide a thorough analytical summary and present management strategies, a SWOT analysis was conducted to identify the strengths, weaknesses, opportunities, and threats in the study area. In this research, the SWOT analysis served as a strategic analysis and decision-making tool rather than a statistical analysis method for Likert scale data. Accordingly, the quantitative findings from the questionnaire, combined with field observations and analysis of the current situation, formed the basis for developing proposed strategies to enhance urban vitality, improve ecosystem quality, and strengthen social interactions in the study area.

3.5. Study area

The Farahzad River Valley is one of Tehran's important northwestern river valleys, situated on the border between Districts 2 and 5 of the Tehran Municipality. This valley, approximately 18.7 kilometers long and covering about 65 hectares, originates from the slopes of the Alborz Mountains and surrounding highlands and extends south to the vicinity of the Yadegar-e-Emam Highway. The river's source is reported at an altitude of around 1800 meters, with an average elevation of about 1675 meters; a characteristic that can influence the microclimate and environmental quality of this area. The presence of a watercourse and relatively green slopes has made this area a desirable recreational and highland summer resort region on the outskirts of Tehran since earlier times (Figure 3) (Zarif Khadem, 2013).

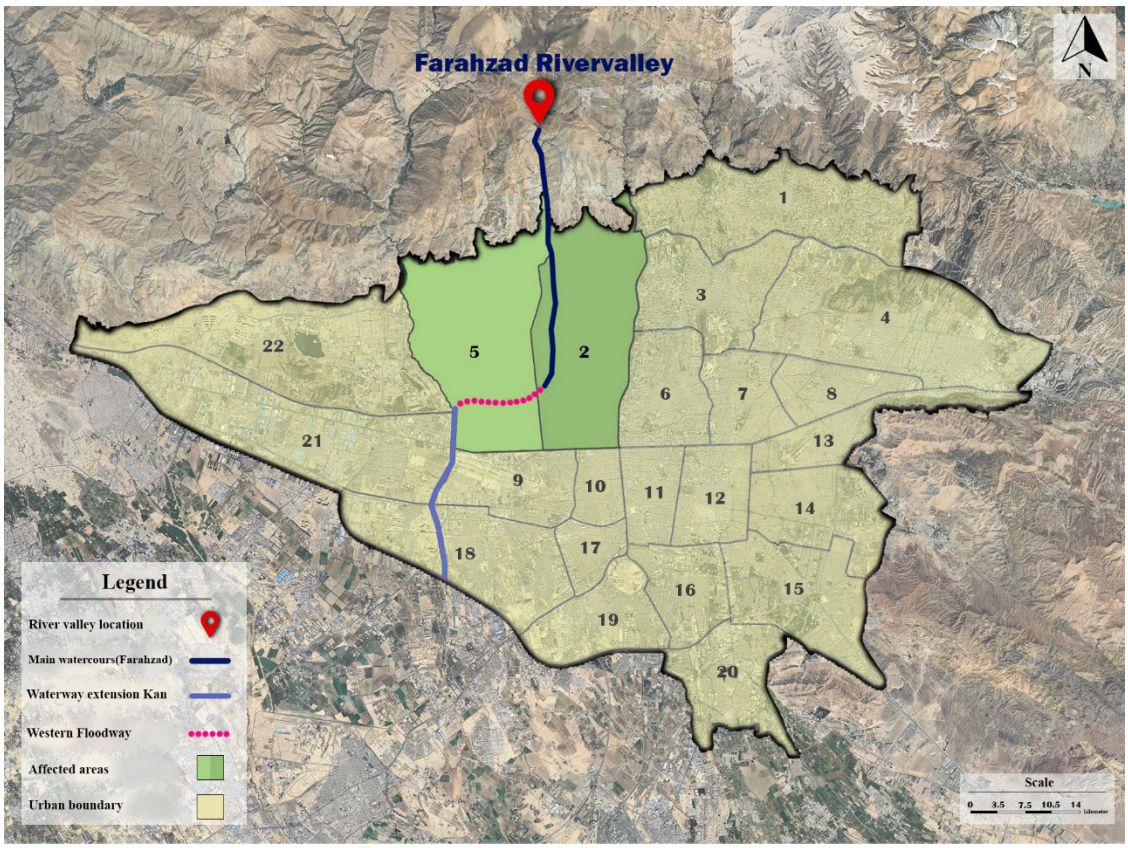

Figure 3. Location of the Farahzad River Valley, main watercourse, and the directly affected areas

Table 2. Summary of recognition studies of the Farahzad River Valley, Tehran

Study type	Description
Route axis	The Farahzad axis originates from the Alborz highlands and extends to the Khomeini Mausoleum; its key elements include Azad University, Pardisan Park, Azadi Square, and Mehrabad Airport (Tehran Comprehensive Plan, 2008).
History of Farahzad	It has a history of about 1500 years. During the Safavid era, it was known for its Imam Zadeh (shrines) Saleh and Abu-Taleb. In the Qajar era, it gained importance for agriculture and tourism. After the revolution, indiscriminate construction destroyed gardens and the traditional fabric (Zarif Khadem, 2013; Rezaei, 2020).
Culture and society	Restaurants and shrines serve as positive social and cultural hubs, and are, in fact, positive anchors. Conversely, part of the river valley is a gathering place for homeless individuals. The local economy is unstable, with most jobs being freelance or seasonal (Zarif Khadem, 2013; Rezaei, 2020).
Land uses	Existing land uses primarily include residential, garden, agricultural, barren, natural and green spaces, riverbeds, and passages (Zarif Khadem, 2013).
Key features	The Farahzad River, the view of the northern mountains, shrines, traditional architecture, and restaurants are the main identities of the region (Tehran Comprehensive Plan, 2008; Rezaei, 2020).
Climate	Average annual temperature of 17.5°C, minimum -10°C in winter and maximum 48.5°C in summer; annual rainfall of 240 mm, mainly in winter, with a dry period of about 8 months (Aghabalazadeh, 2019).
Watershed	Covers an area of 40.5 km² and overlooks upstream areas, including the Imam Zadeh Davood neighborhood (Zarif Khadem, 2013).
Flood hazard studies	Parts of the valley with gentle slopes and high drainage density have the highest flood risk, which can affect public safety and experience (Ghanavati et al., 2013).
Water resources	Main sources include the seasonal river, wells, and qanats; today, the riverbed mostly functions as a channel for urban runoff (Zarif Khadem, 2013).
Vegetation	Old gardens around Punak and Farahzad, green spaces in the middle of Pardisan, and recent plantings in the urban fabric are observed, which can contribute to the ecosystem's quality and environmental vitality (Zarif Khadem, 2013).
Soil and geomorphology	Altitude differences and natural slopes create a diverse landscape of hills and valleys; water and wind erosion have reduced soil quality (Zarif Khadem, 2013).

Nahj al-Balaghah Park is a key initiative by the Tehran Municipality aimed at organizing and revitalizing river valleys, specifically in the Farahzad River Valley. Spanning approximately 35 hectares and featuring an elevation difference of around 40 meters, the park is situated between the Hemmat, Yadegar-e-Emam, and Ashrafi Esfahani Highways. Its strategic location provides excellent access for residents to enjoy an urban natural, recreational space. The main entrances to the park connect to parking lots with a capacity of over 1200 vehicles via Falahzadeh Boulevard and Ivank. Reports indicate that public transportation options for accessing the park are limited. The closest metro stations, Sadeghieh and Sanat Square, are approximately a 30-minute walk from the park entrances. Additionally, the punctuality of bus services has been identified as a limitation. Moreover, some areas of the park feature steep slopes and stairs, which can hinder safe access for individuals with physical disabilities (Zarrin Ghalami, 2011).

Before the project's implementation, part of the Farahzad River Valley faced functional and social challenges due to its topographic features (V-shape, elevation differences), lighting conditions, and oversight issues. According to sources, management and oversight shortcomings exacerbated environmental and social problems in parts of this area (Zarrin Ghalami, 2011). Therefore, the organization and revitalization of the river valley in the form of Nahj al-Balaghah Park were implemented in three phases (Figure 4):

- Phase 1 (2009): Implemented in the segment between Hemmat Highway and Hemila Boulevard, emphasizing the development of green space and pedestrian pathways (Madi et al., 2015).
- Phase 2 (2013): Developed in the segment between Hemmat and Hakim Highways, expanding green space and strengthening areas for sports and cultural activities, as well as connective elements like bridges and viewing terraces (Alehashemi & Shahsavargar, 2014).
- Phase 3 (2017–2020): Completed with a delay and

included elements such as the Nahj al-Balaghah suspension bridge, a light tunnel, and some recreational facilities (e.g., bungee jumping and a multi-dimensional cinema) (Aghakhani Lenbani et al., 2018).

Figure 4. Before and after images of the river valley organization and Nahj al-Balaghah Park construction (Zarrin Ghalami, 2011)

In a descriptive evaluation of the area (based on sources and field observations), some key features and notable challenges have been reported/observed:

Vegetation and microclimate features: Based on field observations, in parts of the park, trees and plants with extensive canopies and suitable ground cover can help retain soil moisture and create favorable microclimatic conditions. These characteristics provide a relatively calmer environmental experience compared to more crowded parts of the city (Figure 5).

Amenities, supervision, and lighting: In some areas, limitations in amenities, as well as shortcomings in pathway supervision and lighting (especially near the channel), have been reported/observed, which can affect the sense of safety and the quality of space utilization.

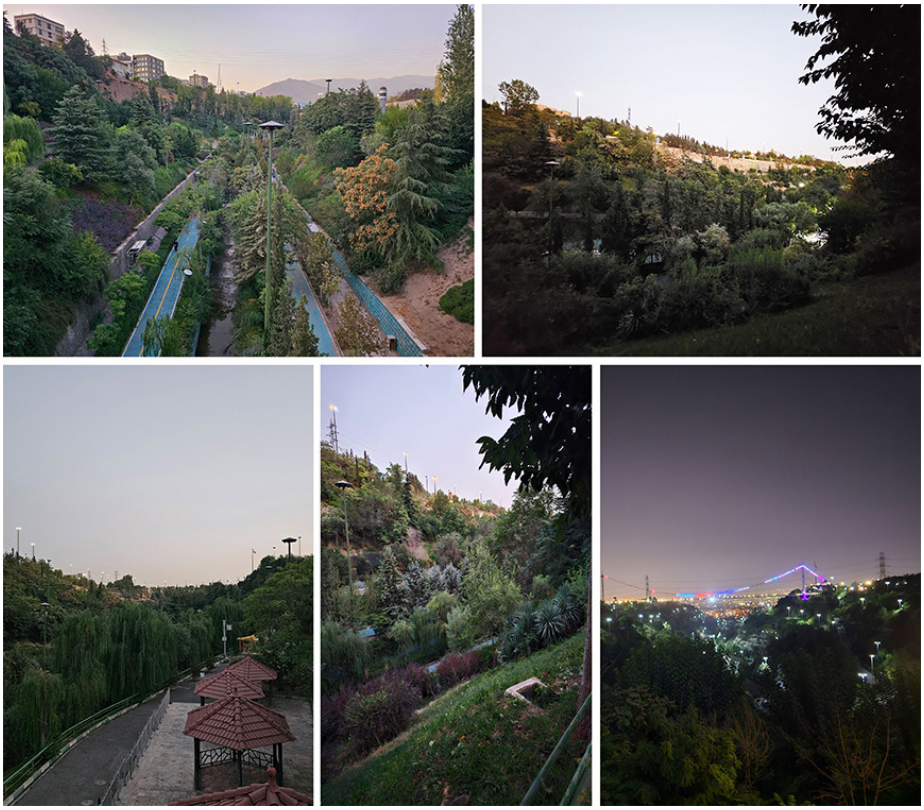

Figure 5. View of Nahj al-Balaghah Park landscapes

Flow transmission bed and safety: In parts of the park, channelization of the bed and changes in channel width are observed. Given the proximity of some pathways to the flow path, this can be a safety and management concern during rainfall and increased runoff (Figure 6).

Figure 6. Channelized bed in Nahj al-Balaghah Park

Cultural-artistic elements and quality of cultural experience: Some cultural-artistic elements are observed in the park. However, to evaluate their "adequacy," "conceptual coherence," and "connection to place identity," precise assessment (e.g., through expert/user questionnaires, etc.) is necessary. Therefore, this topic has been analyzed in the current research within the cultural-recreational dimension items in the findings section (Figure 7).

Figure 7. Cultural and artistic elements used in Nahj al-Balaghah Park

Overall, the Farahzad River Valley and Nahj al-Balaghah Park, as a revitalized and managed river valley area, possess distinct natural-topographic features, as well as a set of organizational and landscape design interventions. Simultaneously, some challenges related to public access, amenities, the effectiveness of embedded cultural-artistic elements, supervision and lighting, and safety considerations of the flow

path are noted as significant issues in the current situation. These features and challenges provide the basis for analyzing the impact of revitalization interventions on urban vitality in the findings section.

4. Findings

4.1. Quantitative findings – organization based on the conceptual model (physical/social/cultural-recreational) and link to SWOT

Based on the research conceptual model, the impact of "revitalization and landscape design interventions" on "urban vitality" is evaluated across three dimensions: physical, social, and cultural-recreational. The quantitative results were organized such that each component was interpreted from both its position in SWOT (strength/weakness/opportunity/threat) and its assigned dimension in the conceptual model. This approach moves the findings beyond a mere list of numbers to an analytical picture of the factors influencing vitality. Seven key components, along with their total scores and means, formed the basis for reporting the results. These seven components are directly traceable within the three dimensions of the conceptual model (Table 3). To ensure the results are not merely descriptive and are "ready for strategic analysis," in addition to the mean of each component, a normalized importance coefficient (I_i) (between 0 and 1) is also provided to enhance the comparability of factors. Here, i denotes the row number of each component, $\bar{X}_i$ is the mean (total score of each item divided by the number of respondents), and 5 is the maximum value considered in the scale used:

$$I_i = \frac{\bar{X}_i}{5}$$

Table 3. Key components and mapping to SWOT and conceptual model dimensions

Row	Component/key item	SWOT	Conceptual model dimension	Total score	Mean	Importance coefficient $I = \bar{X}/5$
1	Creating vibrancy and liveliness in the river valley environment	S	Social / cultural-recreational	145	4.8	0.96
2	Quick and easy citizen access	O	Physical	124	4.1	0.82
3	Probability of social insecurity	W	Social	130	4.3	0.86
4	Lack of amenities	W	Physical	124	4.1	0.82
5	Positive cultural background of citizens	O	Cultural-recreational	126	4.2	0.84
6	Potential for increased satisfaction, improved public literacy, and resilience	O	Social / cultural-recreational	124	4.1	0.82
7	Destructive behaviors, littering, etc.	T	Social (citizen behavior)	130	4.3	0.86

The means range from 4.1 to 4.8, indicating that all reported factors are of "high importance," but their importance pattern is not uniform. The highest importance coefficient belongs to "vibrancy and liveliness" (0.96). Following this, two factors, "social insecurity" and "destructive behaviors," with a mean of 4.3, indicate that the most significant risks to achieving vitality are behavioral and social in nature. "Access" and "amenities," with a mean of 4.1, are both rated highly, but receive a lower priority than security and destructive behaviors. This order is important for the strategy development phase, as it shows that enhancing vitality is not solely achieved through physical intervention; social and managerial components must be addressed concurrently.

1) Findings from the physical dimension: What makes vitality "possible" and "sustainable"

In the physical dimension, two components stand out: access and amenities. This combination conveys a clear message: The infrastructure and means for using the space have been provided, but the "quality of service support" is not yet at the level of need.

Access: "Quick and easy citizen access" with ($\bar{X} = 4.1$) and (I = 0.82) indicates that, from the respondents' perspective, accessibility is a fundamental basis for creating presence. This finding, in terms of the conceptual model, acts as an "enabler" in the physical dimension; even if other components are desirable, lack of access can reduce vitality. The high score for access means the space has the potential to attract people and become active.

Amenities: "Lack of amenities" with ($\bar{X} = 4.1$) and (I = 0.82) is rated as equally important as access. This numerical equivalence between "access" and "amenities" creates an important analytical insight: Merely reaching the space is not enough; sustained

presence and the transformation of presence into a positive and lasting experience depend on services and comfort.

Summary of the physical dimension: Therefore, in the physical dimension, the data point to a "bottleneck": The space has potential in terms of access, but it may lead to reduced satisfaction and decreased sustained presence due to insufficient service support. The results indicate that the physical basis for presence is established; however, the weak amenities and failure to utilize opportunities for proper access could "neutralize" positive effects.

2) Findings from the social dimension: Dynamics under the shadow of insecurity versus vitality potentials

The social dimension in this research includes both the "experience of presence and interaction" and the "enabling or inhibiting social conditions" (i.e., security and citizen behavior). Three components are observed in this dimension: Vibrancy (strength), insecurity (weakness), and destructive behaviors (threat).

Perceived vibrancy and liveliness (social strength): "Creating vibrancy and liveliness in the river valley environment," with ($\bar{X} = 4.8$) and (I = 0.96), is reported as the most significant positive outcome. From the conceptual model's perspective, this component indicates an increase in the quality of lived experience and the activation of the space. In other words, respondents confirm that the interventions have successfully moved the space from a "pass-through and neutral" state towards a "destination and active" space. This finding is highly significant as it directly connects the data to the dependent variable (vitality).

Social insecurity (social weakness): Conversely, "probability of social insecurity," with ($\bar{X} = 4.3$) and (I = 0.86), is reported as a serious weakness. The high importance of this factor suggests that despite the creation of vibrancy, the sustainability of vitality is at risk; insecurity can reduce presence during certain hours (especially at night), prevent vulnerable groups (children, women, elderly) from taking full advantage, and transform positive experiences into cautious or short-lived ones.

Destructive behaviors and littering (social-behavioral threat): "Destructive behaviors, littering, etc.," with ($\bar{X} = 4.3$) and (I = 0.86), is rated at the same level as insecurity but is categorized as a "threat," meaning, if not managed, it can erode positive effects over time. In the conceptual model, this component indicates that vitality in these spaces is not merely a product of design but is strongly dependent on maintenance mechanisms, supervision, and participation.

Summary of the social dimension: The data reveal a dual pattern; on one hand, "vibrancy" is reported at a very high level; on the other hand, "security" and "destructive behaviors" are simultaneously rated as highly important. Thus, vitality has been created in this area, but its sustainability requires management of social-behavioral bottlenecks.

3) Findings from the cultural-recreational dimension: Cultural capital as an opportunity, not a definitive achievement

In the cultural-recreational dimension, two components are reported as "opportunities": positive cultural background and the potential for improving satisfaction, literacy, and resilience. The classification of these factors as opportunities suggests that these potentials are "present" but require intervention and planning to be realized.

Positive cultural background of citizens (opportunity): This component, with ($\bar{X} = 4.2$) and (I = 0.84), indicates that respondents consider the cultural-social context favorable; meaning, there is potential to transform the space into a platform for healthy cultural-recreational activities and strengthening the sense of belonging.

Potential for increased satisfaction, environmental connection, improved public literacy, and ultimately social resilience (opportunity): This component, with ($\bar{X} = 4.1$) and (I= 0.82), shows that revitalization interventions can lead to outcomes beyond physical improvement, including social-educational impacts. This factor acts as a "secondary effect" or "developmental consequence" in the conceptual model. If conditions are met, the space can become a tool for improving urban quality of life.

Summary of the cultural-recreational dimension: The cultural-recreational results are primarily "opportunities," not "strengths." This distinction is important because it implies that the potential exists, but, based on the available data, cannot yet be considered a definitive achievement of the implementation.

4) Summary of quantitative findings in the form of a "governing pattern of vitality":

The combination of quantitative results shows the pattern of vitality in the study area as follows:

- Primary driver of vitality: Vibrancy and positive presence experience ($\bar{X} = 4.8$)
- Necessary physical condition: Access and adequate services ($\bar{X} = 4.1$)
- Limiting bottlenecks: Social insecurity and destructive behaviors ($\bar{X} = 4.3$)
- Developmental potentials: Cultural capital and

potential for enhancing emotions and public literacy ($\bar{X} = 4.2$ and 4.1)

This summary provides a clear picture and conclusion: Design and revitalization have managed to activate vitality, but its consolidation and sustainability depend on social-behavioral management, security, and the completion of amenities; and at a developmental level, cultural potential can play a strengthening role.

4.2. The role of field visits in complementing the analysis

Field findings were used to "complement" and "validate" the quantitative results. Field observations reveal which outcomes are visible in the space and which challenges are experienced concretely. The field findings in this research are structured precisely in line with the three dimensions of the conceptual model.

1) Field findings: Physical dimension – landscape quality, microclimate, and deficiencies in safety and amenities

Field observations revealed that landscape interventions and vegetation in certain parts of the area have produced visible outcomes in environmental quality. The most important of these include:

- Improvement of ecosystem quality and perception of nature in the city: Vegetation and landscape organization have improved perceptual quality and enhanced the experience of being in a natural-urban environment. The practical result of this situation is increased attractiveness for walking, pausing, and resting, transforming parts of the pathways into destination areas.
- Relative reduction of thermal stress at the microclimate scale: Improved shading and the presence of vegetation have been consistent with a relative reduction in perceived heat and an increase in thermal comfort in parts of the pathways.
- Weak accessibility and amenities as limiting factors for the experience of presence: The lack of easy access by public transportation, as also noted in the introduction to Nahj-al-Balagha Park, along with the shortage or insufficiency of certain amenities (such as waste bins, urban furniture, etc.), was clearly noticeable in the field experience. This can explain why "lack of amenities" was reported as an important weakness in the quantitative data. This weakness is not merely a subjective perception but is reflected in the actual, on-site experience of the space. Unsafe spots and safety of channel and edge: The safety of some edges and pathways near channels or high-risk areas was identified as a deterrent factor in field observations. This issue is also linked to the "sense of insecurity" in the social dimension, as physical insecurity can reduce users' perception of safety.

2) Field findings: Social dimension – security conditions, observability, and quality of use

In the social dimension, field observations revealed several key issues that align directly with the quantitative results:

- Insufficient lighting in parts of the pathways: Reduced lighting quality in certain parts of the pathways was observable in the field, which can be a factor reinforcing the perception of "probability of social insecurity." Insufficient lighting, especially in the late hours of the night, typically affects both actual and perceived security, thereby limiting the duration of presence and the diversity of users.
- Observability quality and behavioral control: In some parts of the space, conditions conducive to destructive behaviors were observed, particularly in dimly lit, poorly supervised, or secondary access points. This field observation explains why "destructive behaviors" have received high importance among threats, a threat that can activate a cycle of declining vitality through gradual erosion of environmental quality.
- Space activation and presence mechanism: Despite the challenges, field observations show that in sections where landscape and pathway quality are more desirable, opportunities for pausing, walking, and collective experience are greater. This situation can be interpreted in line with the high score for "vibrancy and liveliness."

3) Field findings: Cultural-recreational dimension – existing potential, but the problem of "conceptual coherence"

In the cultural-recreational dimension, field findings present two very important points that can deepen the perspective of this and other related studies:

- Presence of cultural elements, but without conceptual coherence: Observations indicate the presence of some cultural-artistic elements in the space; however, they do not form a clear and cohesive link to the place's identity in terms of meaning and narrative. As a result, the existing cultural potential has not been fully transformed into a "meaningful experience." Consequently, cultural and recreational opportunities remain at the level of "potential" rather than becoming strengths.
- Potential for transforming cultural capacity into programmatic focus: Field findings show that the mere presence of elements is insufficient; numerous

cultural programs, such as organizing events, setting up cultural-educational camps, and other social activities, are needed to complement the physical design and act as a bridge between cultural capital and perceived vitality.

4) Summary of field findings in the form of "co-validation" with questionnaire results

In a general summary:

- The high score for "vibrancy and liveliness" in quantitative data aligns with the field observation of significant improvement in the quality of some landscapes, favorable microclimate creation, and a pleasant atmosphere, enabling the experience of nature and partial activation of the space.
- The reported "weakness in access and amenities" in quantitative data is consistent with the field experience of service deficiencies and inadequate support for presence.
- The high importance of "insecurity" and "destructive behaviors" in quantitative results aligns with field observations of neglected areas, poor supervision, issues with proper lighting, etc.
- The "cultural opportunity" in quantitative results is explainable by the field observation of potential presence but a lack of conceptual coherence among cultural elements.

Therefore, the integrated analysis (quantitative + field) indicates that vitality in the study area has been "activated," but to become "sustainable vitality," three levels must be managed simultaneously: completing physical services, improving security, surveillance, and what are considered key prerequisites for the presence and placement of citizens' communities, and finally, strengthening cultural and recreational planning.

5. Discussion and interpretation of findings

The analysis of findings from expert questionnaires and field observations reveals that the revitalization of the Farahzad River Valley and the development of Nahj al-Balaghah Park have provided a new basis for "urban vitality" beyond being merely a physical or ecological intervention. However, a precise explanation of this impact requires examination within the framework of the conceptual model's dimensions and comparison with similar experiences.

5.1. Analysis of physical and ecosystem dimensions: The link between infrastructure and presence

The findings in the physical dimension showed that landscape design and providing appropriate access are the primary prerequisites for the formation of vitality. The high mean scores for "access" and "landscape quality" indicate that the interventions have recreated the human-nature connection in the heart of Tehran. This result is consistent with Alehashemi's (2010) findings, which emphasized the role of sustainable landscape design in enhancing place identity. Furthermore, field observations regarding the reduction of microclimatic thermal stress support the view of Sadreazam Nouri et al. (2021), who considered river valley regeneration a necessity for environmental resilience.

However, a significant contradiction is observed in the physical findings: "Access" is identified as an opportunity, while "lack of amenities" is identified as a serious weakness. This situation suggests that urban management has stopped at the "infrastructure provision" stage and has performed weakly in the "provision of support services for presence." This finding aligns with the warning from Çalik et al. (2022) in Turkey, who argued that natural potentials without adequate service infrastructure pose a threat to the sustainability of urban projects.

5.2. Analysis of social dimensions: Dynamics under the shadow of insecurity

In the social dimension, the highest importance was assigned to "creating vibrancy and liveliness," indicating the project's success in transforming a non-functional space (a gathering place for the homeless and delinquency before revitalization) into an active one. This social transformation is consistent with the studies by Karimi et al. (2017), who considered river valley regeneration a factor in strengthening social interactions.

However, the key point in the social discussion is the equal rating of "vibrancy" with "probability of social insecurity" and "destructive behaviors." This finding suggests that vitality in this area is a "fragile" phenomenon. Although revitalization projects have prepared the space for presence, weakness in social supervision and behavioral management prevents the formation of sustainable vitality. This situation underscores the necessity of employing participatory models like NBN, emphasized by Foroudi (2016), as the sustainability of vitality is achieved not solely through police surveillance but by leveraging community participation and strengthening the sense of belonging (as demonstrated by Foppoli (2018) in Italy).

5.3. Analysis of cultural-recreational dimensions: Potential capacities and conceptual disconnect

Findings related to "positive cultural background of citizens" and "potential for improving public literacy" indicated that the Farahzad River Valley possesses high cultural capital. However, field observations suggest that the existing cultural elements lack conceptual coherence and have failed to present a distinct narrative of identity for the place. This disconnect between "potential" and "realization" is precisely what Singtuen and Gałka (2024) highlighted in Thailand. They showed that natural elements only transform into cultural identity when linked with creative programs and community-based participation. The results from this section indicate that urban management must shift from a "physically-centered" approach to an "event-centered" one. The lack of coherence among elements signifies that the river valley has yet to establish its position as a "cultural landscape" in the minds of citizens, as referenced by Prakash (2025).

5.4. Strategic synthesis: From physical intervention to comprehensive management

The integration of quantitative and qualitative findings suggests that the path to enhancing vitality in the Farahzad River Valley and Nahj al-Balaghah Park involves four strategic stations:

- Aggressive strategies (SO): Leverage the created vibrancy, the integration and reinforcement of numerous artistic elements, and the positive cultural and historical background to host appropriate events and festivals and strengthen the sense of belonging during citizens' use of passageways and pedestrian areas. Given that the park's name is adorned with the honorable name of Hazrat Amir al-Mu'minin (A.S.) and evokes Nahj al-Balaghah, the unique and luminous work of that Imam, it is recommended to invite the best artists and skilled individuals proficient in the works and sayings of Mawla Imam Ali (A.S.) to create an exemplary experience of harmony between artistic elements, narratives, and visual elements related to him and the Islamic, historical, and Shi'a identity, and to optimally utilize the untapped potential of this park for hosting related events.
- Conservative strategies (WO): Address weaknesses in amenities and public transportation infrastructure to realize social opportunities. Establishing community-based facilitation offices to increase resident participation in park management and gather actionable feedback can be highly effective and progressive for this strategy.
- Competitive strategies (ST): Control behavioral, destructive, and harmful threats (from highly sensitive issues to littering) through citizen education, smart supervision, etc., so that the "vibrancy of the environment" is not damaged.
- Defensive strategies (WT): Enhance lighting, redesign high-risk areas, and utilize online warning systems and similar methods to prevent physical weaknesses from becoming security threats. The use of state-of-the-art technologies and methods is strongly recommended for achieving this goal.

Ultimately, this research, going beyond previous studies, such as Hosseini et al. (2025), which focused on physical transformations, demonstrates that "urban vitality" in river valleys is the product of a three-dimensional ecosystem: The physical aspect must create "space and access," the community must manage "security and behavior," and culture must provide "meaning and belonging."

6. Conclusion

This research, aimed at evaluating the impacts of revitalizing the Farahzad River Valley and Nahj al-Balaghah Park on urban vitality, showed that the regeneration of these spaces is not merely a physical or ecological intervention but a multi-dimensional process that gains meaning through the interaction of physical, social, and cultural-recreational components. Based on findings from expert surveys, field observations, and strategic analysis, the revitalization project of the Farahzad River Valley, along with the establishment and development of Nahj al-Balaghah Park, has achieved numerous successes as a revitalization project, creating multiple opportunities and significant potential. However, the realization of these potentials has not been uniform across all dimensions, and its sustainability faces structural and managerial obstacles.

In response to the main research question, the findings indicated that the socio-cultural revitalization of the Farahzad River Valley and Nahj al-Balaghah Park has primarily affected the social aspects of urban vitality through increased presence, strengthened social interactions, improved environmental perception, and the initial development of a sense of place. However, the extent of this positive impact has been limited and unstable, and its continuation depends on addressing social insecurity, lack of amenities, and enhancing

cultural programs. In other words, the interventions have created the necessary conditions for social life to return to the river valley space; however, the vitality has not yet achieved sustainability. The results show that in the physical dimension, improving landscape quality and spatial reorganization have been among the project's most significant strengths. Conversely, the absence of certain amenities, inadequate support facilities for presence, and failure to meet some user needs have limited the full effectiveness of these interventions. In the social dimension, although the space has managed to increase relative vibrancy, collective presence, and interaction potential, persistent concerns related to social insecurity, destructive behaviors, and weak social oversight challenge the sustainability of this situation. In the cultural-recreational dimension, it was found that the study area holds considerable potential for strengthening place identity, raising public awareness, and developing collective activities. However, these potentials have not yet been fully realized through coherent cultural programs and event-driven initiatives. Therefore, the most important conclusion of the research is that urban vitality in revitalized river valleys results from the synergy among three main components: Physical quality of the space, social organization, and cultural meaning-making. When these components are simultaneously and harmoniously strengthened, it becomes possible to transform a river valley from a purely natural or leisure space into a "living urban landscape." Conversely, if urban management focuses solely on physical interventions and neglects social and cultural dimensions, the vitality created will remain superficial, unstable, and vulnerable. Thus, the findings affirm that the success of river valley revitalization projects depends not only on physical improvement but also on establishing integrated, participatory, and multi-dimensional management.

The results of this research also have important practical implications for urban planning and management. Firstly, enhancing vitality in such spaces requires the completion of safe infrastructure, improvement of amenities, and better readability and accessibility of the environment. Secondly, urban policymaking must move beyond a purely construction-oriented perspective and, by leveraging the capacity of local groups, cultural institutions, and community-based programs, strengthen citizens' sense of belonging, responsibility, and participation in the conservation and use of these spaces. Thirdly, the sustainability of vitality is not possible without intervention at the behavioral culture and public education level; therefore, educational programs, cultural events, social supervision mechanisms, and smart space management tools should be considered complementary to physical revitalization. On a broader level, the experience of Farahzad and Nahj al-Balaghah demonstrates that urban river valleys in Tehran and other metropolises can be transformed from problematic and underutilized peripheries into centers for urban regeneration, improving the quality of life, strengthening social capital, and increasing cultural and environmental resilience; provided that these spaces are viewed not as isolated projects but as part of a connected system of green spaces, public space networks, and spatial justice policies. From this perspective, the model extracted from this research can serve as a basis for rethinking urban river valley revitalization policies and designing more comprehensive intervention frameworks for ecological-cultural spaces.

Despite this, the results must be interpreted considering the research limitations. The study population was limited to 30 experts, university professors, specialists, managers, and urban knowledgeable individuals. Therefore, the findings represent an expert assessment of the study area rather than the general public's perception. Furthermore, field observations were conducted over a specific period and may not fully reflect seasonal, temporal, and behavioral variations in space utilization. Additionally, the questionnaire was developed based on the conceptual model, theoretical literature, and expert opinions; thus, some experiential nuances related to daily user behavior, lived experiences of different age groups, and general perception of space quality may extend beyond the framework of the applied measures. Consequently, it is recommended that future research utilize a larger sample size and combine expert perspectives with direct citizen surveys to provide a more comprehensive picture of the impacts of river valley revitalization on urban vitality. Moreover, employing more advanced analytical methods, conducting comparative studies among different river valleys in Tehran, and assessing seasonal and temporal changes in usage patterns can help deepen the findings and increase their generalizability. Examining the role of variables such as gender, age, mode of access, duration of presence, and type of user activity can also enrich future analyses. Overall, this research suggests that the

revitalization of the Farahzad River Valley and Nahj al-Balaghah Park has been an effective step towards enhancing urban vitality. But the ultimate success depends on transitioning from a project-based approach to a process-oriented, integrated, and human-centered approach where spatial design, social management, and cultural planning act as complementary aspects of a single strategy.

Authors' Contributions

First author: 34%; Second author: 33%; and Third author: 33%.

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Conflict of Interest

The authors declare no conflict of interest associated with this article.

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