

## Original Article

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## Evaluating effectiveness of visual management model in enhancing urban form and landscape quality: a case study of district V, tehran municipality

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### Abstract

Urban form and landscape play a crucial role in enhancing the beauty of cities and shaping their identity. Many modern cities lack organized visual management policies and often prioritize economic interests over establishing a coherent visual identity. This neglect has harmed urban form and landscape quality in Tehran. The present study examines urban form and landscape quality in District 7 of Tehran Municipality with a visual management approach. The research is applied and analytical, employing a mixed (qualitative and quantitative) method. Data were collected via library research and a closed-ended questionnaire administered to experts from District 7. A stratified probabilistic sampling method was used, and the DEMATEL model was applied for data analysis. Results showed that the criterion "Promoting connectivity and continuity among the landmarks and spaces of the city" (score: 1.58) and "Attention to structural and organizational integrity and coordination" (score: 1.01) had the greatest influence. Conversely, "Increasing public attendance and improving the space quality in places where landscapes are perceived" and "Urban management systems equipped with technical and specialized forces" (score: -1.5) were most influenced by other factors. The findings indicated that insufficient attention to visual management in District 7 has led to a weak connection between natural and built-up elements, and there is no coordination between different levels of decision-making. Therefore, a holistic view is recommended to physical-visual and social-perceptual characteristics, as well as integrated visual management.

### Keywords

Analysis  
Urban Form and Landscape  
Visual Management  
Tehran  
District 7

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## 1. Introduction

Enhancing the cityscape and city image goes beyond a superficial and transient organization. The city, as a complex system that attains sustainability within its context, functions like a living entity that constantly changes and evolves. This dynamism influences many of the city's behaviors and reactions. The cityscape and city image are responses to the various forces exerted by the context. They are among the most critical qualities of urban spaces, strengthening or weakening the sense of place and consequently, the sense of belonging. They significantly contribute to the identity and desirability of a place and society. Visual qualities not only mirror these values but can also, in some cases, serve as national and regional symbols and identities (Shamlo, 2018: 197).

The cityscape symbolizes the cultural manifestations and civilization of cities, as well as the countries, ethnic groups, and nations. It represents the perspective that cities convey to their viewers. In recent years, urban spaces have increasingly lost their cultural, historical, and visual identities, primarily due to the pursuit of economic benefits by stakeholders. In theoretical and intellectual debates on cityscape, the subjective and objective concepts must be considered simultaneously, as the cityscape is what citizens observe (Daneshpour, 2018: 60). The cityscape refers to the evolving qualities of urban space that viewers perceive over time. Based on its historical trajectory, the cityscape was initially understood as an objective concept and then as a subjective one. Among the points regarding the cityscape is that it is seen, remembered, and evokes joy. Unlike an architectural work that is created in a space, a city develops its final landscape and image over time, which are in constant change (Hasanzadeh Moghadam, 2002: 4).

One prominent issue in the landscape and image of contemporary cities is the lack of a coherent order. Two main views exist: some specialists consider it a purely cultural issue, asserting that society's culture influences the cityscape and its appearance. Conversely, others argue that the distorted image of today's cities results from neglect and inaction by relevant stakeholders, alongside laws and regulations approved by the engineering system and municipalities over decades. The absence of clear, thoughtful, yet flexible visual management appropriate for the context has led to visual clutter in many cities. Examples of such visual clutter include ambiguous forms, a lack of physical-visual continuity, and weak visual connections between urban areas, which

complicate citizens' navigation through the city, hindering access to various urban areas, particularly in large cities. This clutter adversely affects citizens' psyche and the performance of cities, disrupting the semantic link as well as the cognitive-perceptual relationship between the city and its residents (Fadami, 2020: 190).

Today, the disordered and cluttered cityscape of Iranian cities, especially the metropolis of Tehran, is recognized by officials, experts, and the public. However, there are still ambiguities among experts regarding the definitions of "cityscape" and "city image." Ambiguities in the substantive dimensions of cityscape and city image, along with the procedure for dealing with its disorders, on the other hand, have contributed to the absence of coherent planning in this area (Seifollahi, 2022: 5).

The cluttered cityscape and disordered city image of Tehran are widely recognized issues, despite the unclear meanings and dimensions used for each of these two terms in the country. A significant yet often overlooked reality is that the disordered urban landscape causing various social, cultural, legal, moral, activity, psychological, visual, and environmental anomalies, whether from its objective perspective (cityscape) or from the perspective of an individual's perceptions and mental images of it (city image), is an inevitable product of the various disorders, anomalies, and inadequacies that shape the overall urban development process in Tehran. Essentially, it can be said that the cityscape serves dual roles: it is both a container that shapes citizens' activities, behavior, and perceptions in general, and the reactive decisions of policymakers and other actors in special, and a content that is influenced by the actions of various actors in society, including developers, producers, and urban policymakers. Therefore, the challenge of visual management, the city image, the processes of its formation and influence must be analyzed and examined on a broader, deeper, and more comprehensive level than its visible and physical dimensions as a final and static product (Gorji, 2006: 87).

Attention to the cityscape and city image in Municipal District 7 of Tehran has been overlooked in urban and regional policy-making. This neglect has contributed to various social, psychological, economic, activity-related, environmental, and legal anomalies, implying an urgent need to enhance the visual management of Municipal District 7 in its comprehensive sense. Achieving this effective management requires a

targeted approach regarding the substance, procedure, and scale of action in relation to policy-making. This approach includes 2 aspects. The first aspect involves a radical revision of infrastructure, perspectives, and both macro- and micro-policies, particularly addressing deficiencies in the system that guide urban development processes. The second aspect entails taking direct action to resolve the disorders and disorganization of the region's landscape, image, and structure, as a product of this process, by guiding its aesthetic, environmental, social, legal, visual, psychological, and perceptual dimensions. Visual management of Municipal District 7 can be defined as a process that includes planning and designing, organizing, and guiding the realization of visual quality, as well as monitoring and controlling physical form to help observers perceive and experience the space more strongly, fostering a coherent and continuous mental image of the city in the minds of its citizens, while still preserving the wonder and mystery of the space. The primary objective of visual management is to improve existing visual qualities and organize the image and landscape of Municipal District 7 of Tehran (Daft, 2010: 6).

In recent years, various programs, plans, guidelines, and regulations have been developed and implemented to guide and shape the city's image, each having its own effects on the structure of the neighborhoods within Municipal District 7. However, there is a notable lack of thorough, comprehensive studies addressing the impacts of these programs, including their positive and negative consequences, as well as the pathologies of solutions adopted. Had such studies been conducted properly in the past, we would not be witnessing this level of diversity and inconsistency in the region's image and landscape. Therefore, given the above discussion and the cultural, historical, and identity context of this region, home to neighborhoods such as Qasr and Heshmatiyeh, Eshratyeh Barracks, Gorgan, Nezamabad, Aramaneh, investigating the processes and patterns of cityscape and city image management over the past decades is crucial. This can identify its weaknesses and strengths and pathologize past and current processes, ultimately paving the way for effective, logical, practical, and scientific strategies aimed at improving the quality of variables of the cityscape and image of Municipal District 7 of Tehran.

The present study aims to identify the processes and forces that affect the cityscape and image of Municipal District 7 in Tehran, and pathologize existing structures

and frameworks in the visual management of the city, to develop an integrated and efficient model for improving the cityscape and city image quality in this district. In pursuing this objective, special attention is given to establishing necessary legal and ethical infrastructures on a macro scale and transforming urban approaches and policies, which represent key challenges and have a more direct connection to the problem. The primary focus of this research is to examine the procedures, policies, and frameworks of visual management in Municipal District 7 of Tehran. The aim is to enhance the district's urban landscape and image quality, establish a distinct identity for the area, and foster positive interactions between residents and users with the existing built-up and natural environment. Thus, the research question is as follows: What criteria affect visual management in improving the cityscape and city image quality of Municipal District 7 of Tehran?

## 2. Research Background

Numerous national and international studies have examined the concept of visual management, cityscape, and city image. Some of these studies are summarized below.

Gao et al. (2025), in their study "Landscape design utilizing visual communication technologies," concluded that global urbanization has increased along with economic growth. While cities drive productivity and well-being, they are often accompanied by the loss of nature, surging resource depletion, environmental degradation, and public health risks. Urban parks, vital as "second nature," help mitigate these issues through green interventions. The authors integrated digital technologies and computational methods to enhance the scientific rigor of landscape design. They explored the use of computers to extract visual data from images, aiming to reduce subjectivity and improve objectivity in landscape assessments. By applying a quantitative research method, they demonstrated how digital technologies and machine learning can be incorporated into the landscape design process to enhance data collection, processing, and structured data validation. They argued that integrating the humanities into design fosters meaningful visual interactions, critical to sustainable urban development. Finally, they proposed a framework that integrates computational techniques with design sensibilities to enhance the environmental and aesthetic qualities of urban parks (Gao, 2025:19).

Zhang et al. (2025), in "Study on mechanism of visual comfort perception in urban 3d landscape," concluded that visual landscape assessment is a crucial method for evaluating the value of visual landscape resources. Their study aimed to improve the visual environment and sensory quality of urban landscapes by establishing standards for visual comfort in urban natural landscapes. It employed line-of-sight algorithms and multi-factor analysis to evaluate the spatial visibility and visual exposure of building clusters in core urban areas, identifying areas and perspectives with high visual potential. The study used a mixed qualitative-quantitative method. Focusing on the perspectives of prominent 3D models and the visual environment of the surrounding landscape, it employed the city sky, green space, and water features as key visual elements to assess the comfort of urban natural landscapes. The results revealed that 3D visual analysis effectively demonstrates the relationship between landmark buildings and surrounding landscapes, offering scientific support for urban planning and contributing to the development of a more distinctive and attractive urban space (Zhang, 2025: 625).

Ito et al. (2024), in their study "Understanding urban perception with visual data: a systematic review," investigated how visual features of the built-up environment influence individuals' perception and experience of cities. Although many studies have investigated visual perception in cities, this study combined a traditional systematic review approach with recently developed machine learning methods to make the review repeatable and leverage the efficiency of these new techniques. The study, by comprehensively reviewing 393 articles on urban visual, demonstrated the possibility of conducting an automated systematic review for the first time using advanced machine learning models and large language processing (Ito, 2024: 9).

Brandalis et al. (2022), in their study "Development of a typology for understanding visual management concepts and their relationships," examined visual management taxonomies, using both qualitative and quantitative methods. They viewed visual management as a strategy for information management aimed at enhancing process transparency, a core principle of lean production philosophy. While this strategy has been widely used in production, its use within construction remains limited. Since the development of a visual management paradigm is largely based on trial-and-error efforts, it is useful to create taxonomies of its practices that can lead to typologies to support

the understanding of concepts and the development of theories (Brandalise, 2002: 12).

Vafadari et al. (2025), in their study "Investigating the effect of lighting on the attractiveness of the night landscape of urban parks from the perspective of citizens," concluded that lighting at entrances and along sidewalks plays a crucial role in enhancing the beauty, legibility, security, and vitality of these areas. A mixed method (qualitative-quantitative) was employed to conduct the research, with data collected through library studies, observation, questionnaires, and semi-structured interviews. The findings indicated that appropriate lighting not only beautifies urban parks at night but also enhances security and safety, legibility of these spaces, and the livability of cities during both day and night (Vafadari, 2025: 146).

Yadollahi et al. (2024), in their study "Investigating the improvement of the legibility of cityscape on urban quality," examined the legibility of the cityscape as a key indicator influencing urban quality. They analyzed three case studies in Iran, South Korea, and the United States to identify factors affecting the legibility of the cityscape. The method included content analysis of scientific sources, a comparative study of selected projects, and an evaluation of legibility indicators from physical, perceptual, and functional perspectives. The comparative study revealed that cityscape legibility depends not only on clear visual signs and spatial organization but also on users' subjective experience and sense of belonging. Using guiding paths, legible and interactive design of spaces, and incorporating identity elements can help improve the quality of urban spaces. The findings can serve as a model for urban planners, architects, and landscape designers to enhance the legibility of urban environments and user experience (Yadollahi, 2024: 12).

Several aspects differentiate the present study from prior research: First, while previous studies have examined the concepts of cityscape, city image, and visual management separately, the present study addresses these concepts collectively for the first time. Second, it explores a broader, more comprehensive, and diverse range of dimensions and indicators than similar studies. It also emphasizes social, economic, environmental, and management factors, in addition to physical-spatial criteria. Considering the heterogeneous nature of Municipal District 7 of Tehran, characterized by its diverse formal and physical elements, there has been a noticeable lack of detailed and comprehensive studies focusing on the visual management of the district. Third, the study aims to

understand the causes, processes, and effective contexts for the failure of visual management to improve the district's landscape and image quality, as the majority of research conducted on this concept has basically dealt with its definition, dimensions, indicators, and measurement methods. Fourth, while previous studies have primarily relied on data analysis software that depends on scores assigned to specific variables by the citizens of the study area, the present study utilizes the DEMATEL model for data analysis. This approach is chosen due to the combination of two variables—urban landscape and visual management—along with the specialized variables involved. This model illustrates the degree of positive/negative influence between the criteria.

### 3. Theoretical foundations

In defining cityscape and city image, ordinary people and non-specialists often use these terms interchangeably as synonyms. However, landscape and urban landscape are two separate discussions with two different definitions. Since the concepts of cityscape and city image encompass objective and subjective dimensions, there is always a concern that they may be used interchangeably, and the lack of a common literature may lead to misunderstandings.

City image refers to the urban form and everything visible and perceptible. It encompasses all visual information that an observer perceives from a space over time. The city image describes the combination of the appearance of buildings and the spaces between them or within cities, such as green spaces, that include all elements that, when combined, create the overall appearance of that space. The city image includes elements such as the appearance of the land, walls, activities within the city space, people, and both fixed and moving attachments in that area. City image has a dynamic nature. Cullen introduced the concept of "image content" in relation to some components of urban space, such as color, texture, scale, style, personality, and the presence of people, activity, and life. Qualities such as diversity, visual richness, transformability, and visual relevance in urban space are crucial in making spaces responsive. Given the abundance of visual information, achieving desirable diversity is particularly important. The diversity ranges from uniformity (lack of diversity) to clutter. Maintaining an appealing level of diversity and complexity in urban landscapes enhances the spaces' attractiveness and pleasantness (Pakzad, 2006: 23).

Cityscape encompasses all the perceptible visual

information about the form and shape of the city that the observer receives from a distance from a specific point of public places and areas. In a cityscape, the subject of view or object is easily distinguishable. Typically, this type of landscape, also referred to as a view, can be categorized into three general types: from inside to inside, from outside to inside, and from inside to outside. The semantic domain of urban landscape also encompasses focused landscape and perspective. The cityscape and city image, as points of contact between the human and the phenomenon of the city and its perceptible aspect, influence the individual's actions, reactions, and their qualitative evaluation (Bereliani, 2018: 39).

The cityscape and the city image are vital components that create the physical structure of cities, as their characteristics are objectively visible and mentally understandable to citizens. According to Lynch, factors affecting the objective concept of city image include landmarks, edges such as rivers, paths, nodes, and zones. If one of the influencing factors, whether objective or subjective, faces challenges, it can adversely affect the other one. This may hinder citizens' understanding of their urban environment. Consequently, cityscape and city image can be regarded as active, living phenomena that shape citizens' relationships with urban space while simultaneously creating memories in the citizens' minds and transforming their culture (Manzo, 2005: 27).

Urban visual management can be defined as the process of planning and organizing a city's physical structure to enhance the audience's comprehension of the space and help create a coherent and continuous mental image of the city. In other words, urban visual management is a subset of metropolitan management, focusing on physical and visual aspects of the city, to improve the quality of the city's view and cityscape from macro to micro scale (Ito, 2024: 11). There are various approaches to cityscape and city image quality, particularly with an emphasis on visual management, as follows:

Location-based approach to the city image: Cullen believes that what is effective in creating a construction is architecture, but the juxtaposition of several constructions creates a new quality in the urban environment. The success of this juxtaposition is related to the art of connection, which involves establishing relationships between visual elements in a new whole. According to Cullen, understanding the qualities of the city image requires movement through

space. Additionally, the arrangement of constructions presents varying visual qualities from different angles, and only by moving within the space and around objects can the observer perceive the creative qualities of perspective in urban space and the meaningful concept of the visual dimensions of the cityscape (Berehiani, 2018: 33).

Perceptual approach to the city image: The experiences, memories, and preferences of citizens form their perceptions of the elements of beauty in the urban space, significantly contributing to their civilization and culture. The interplay of these factors enhances the quality of urban spaces, enabling observers to grasp both subjective and objective aspects of the city image. Additionally, a message in itself lacks inherent meaning unless it has been experienced by the observers and contains hints in their minds. With this in mind, important perceptual points in the discussion of city image include: 1) Attention to people's visual environmental preferences; 2) Awareness of their perception and mental image of legibility; 3) Consideration of people's memories and experiences; 4) Respect for aesthetic artistic dimensions; 5) Attention to the perceptual context and background; 6) Attention to the concept of time in the perception of the visual environment; and 7) Attention to order and organization (Daft, 2010: 19).

Contextual approach to city image: This approach points out that the architecture of a single construction in the city image is part of a whole, emerging through the proximity of a set of architectures (urban architecture). Such proximity becomes a context when its totality embodies a common language, a quality that is considered context in urban design knowledge. Thus, theorists define context as the totality of environmental and visual attributes surrounding a place, where the continuity of visual elements creates a common language in the city image and represents the collective character and identity of that place. According to Carmona, nowadays, all contemporary approaches to cityscape are influenced by Cullen's work, a contextual approach in which the whole is greater than the sum of its individual parts.

Physical-historical approach: In the physical development process of many Iranian historical cities, insufficient attention has been given to the structure and form of the historical core. Consequently, issues such as an inability to adapt to new physical changes, poor connection with the existing network structure, and spatial isolation have affected these historic cores. Neglecting contextual urban design and planning,

disregarding the physical and non-physical values of the existing context, and implementing hasty plans have contributed to the fading of these historical cores within public memory (Bonakdar, 2001: 57).

Nature-oriented approach: Growing urbanization in recent decades has significantly altered natural landscapes, influencing ecological systems and resulting in diverse types of landscapes. Although urban expansion is always viewed as an encroachment on the surrounding environment and its ecosystem, it can be addressed by studying biological species and city ecosystems. To enhance the biodiversity of a city's ecosystems, it is crucial to reflect the citizens' perception of various ecosystem components. The nature of a city encompasses multiple environmental elements that improve climate conditions, water quality, and the functioning of environmental species. Nature-related needs linked to a city's physical characteristics can be categorized into three discussions: contact with nature, aesthetic preferences, and recreation and entertainment. There are many reasons to prove that interacting with nature enhances the quality of life by providing an opportunity to escape from the hustle and bustle of urbanization. The natural environment in this section includes large areas such as natural corridors, parks, and forests (Duncan, 2008: 212).

Physical-visual approach: The physical perspective in the city image gained prominence in the 20th century. It focuses on the physical and superficial aspects of urban spaces, emphasizing the components and elements that contribute to their beauty. This perspective overlooks crucial factors such as economic, social, cultural, and managerial influences, resulting in a narrow view of the city image that is primarily product-oriented. Theorists of this perspective include Unwin, Le Corbusier, and Camillo Sitte, who have a physical view of the city image. The result of such a one-dimensional view is that urban spaces often fail to meet citizens' expectations regarding the aesthetics of city image (Pakzad, 2006: 23).

Integrated approach in urban planning and management: The integrated and holistic approach to spatial planning and management has emerged in response to recent developments in societal governance, characterized by multi-level and multi-agent strategies. This governance model highlights the imperative for coordination within various decision-making hierarchies, as well as across different development and construction programs and plans. The governance model, and through it the strategic

approach, addresses issues that cannot be resolved within the framework of just one area of responsibility. The need for communication between national, regional, and local strategies and policies necessitates the establishment of strong linkages between various planning departments and institutions. Especially in matters such as population, economy, transportation, communications, and leisure, the necessary coordination should be made between neighboring and adjacent areas in terms of planning goals, foresight, and methods of implementing plans (Healey, 2004: 60). The institutional nature of participatory planning and the need to regard social networks and their tendencies

and interests in urban decisions place serious attention on space (the set of social relations in space) and location and geographical boundaries. In this regard, the participatory nature of urban planning, which pays attention to spatial-local differences as one of its main features, acknowledges the need for an integrated, comprehensive, and holistic approach in spatial planning. An integrated approach requires the coordination of various spatial policies at horizontal levels, in addition to coordinating policies at different vertical levels of government, and aligning these vertical policies with the horizontal level (Moradi 2005: 28).

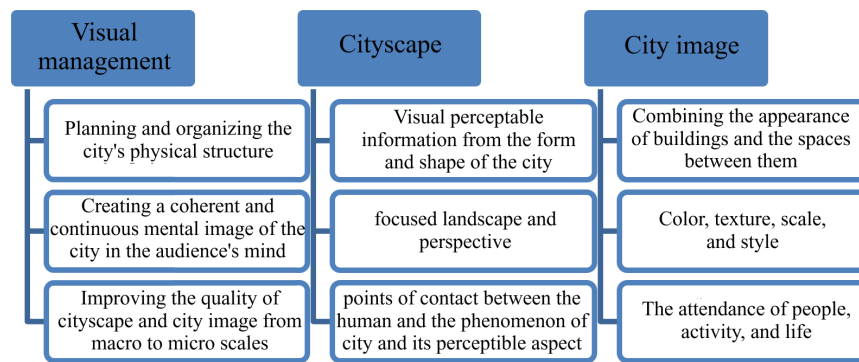


Figure1. Theoretical research model

#### 4. Methodology

The present research is an applied analytical study that employs both qualitative and quantitative methods (Dadashpour & Zahedpour, 2018: 200). The statistical population included 80 experts from the Municipality of District 7 and professors in urban planning. The samples were selected through stratified random sampling. This technique divides the population of experts into subpopulations (called strata). Once divided, a sample was selected from each stratum. This means that some of the management organizations of Tehran were chosen as the first strata, including the Municipality of District 7 and the Faculty of Geography and Urban Planning of Islamic Azad University (North Tehran Branch). Next, several experts and specialists were selected from each stratum using

simple random sampling.

The data were collected through a library study, using documents, theses, and articles. Then, the intended data were extracted for quantitative analysis and scored by experts through a closed-ended questionnaire. The DEMATEL model was used for data analysis to answer the research question. The DEMATEL (Decision Making Trial and Evaluation Laboratory) model was introduced to measure the cause-and-effect relationships among indicators in decision-making. This method does not specifically rank indicators, but is designed to measure the degree of influence on and influence by of a system's indicators. Table 1 describes the dimensions and criteria extracted from the research.

**Table 1. The extracted dimensions and criteria**

Dimension	Criteria	Reference
Environmental	<ul style="list-style-type: none"> <li>- Attention to the crucial role of nature and green space in the city</li> <li>- Environmental considerations in urban planning and architectural rules and regulations</li> </ul>	Duncan (2008: 212)
Physical	<ul style="list-style-type: none"> <li>- The connection of each space or building with other spaces (legibility)</li> <li>- Emphasis on preserving the identity of places and visual and aesthetic qualities</li> <li>- Preserving and organizing historical fabrics</li> <li>- Emphasis on mixed uses</li> <li>- Promoting continuity and connectivity among the city's main landmarks and spaces</li> <li>- Reducing the duality of the cityscape and city image in the eastern and western parts of the region</li> </ul>	Pakzad (2006: 23); Bereliani (2018: 39); Ito (2024: 11)
Economic	<ul style="list-style-type: none"> <li>- Visual management for improving the quality of the image and landscape to respond to economic needs</li> <li>- Public participation and private sector investment to achieve visual quality</li> </ul>	Bereliani (2018: 33)
Socio-cultural	<ul style="list-style-type: none"> <li>- Attention to people's perception and mental image of spaces</li> <li>- Increasing public attendance and improving the space quality in places where landscapes are perceived</li> <li>- Educating citizens and setting regulations to coordinate facades in compliance with regulations</li> </ul>	Manzo (2005: 27); Daft (2010: 19)
Structural-managerial	<ul style="list-style-type: none"> <li>- Compliance with visual criteria in urban planning and architecture regulations</li> <li>- Attention to structural and organizational integrity and coordination</li> <li>- Urban management systems equipped with technical and specialized forces</li> <li>- Connections between national, regional, and local strategies and policies</li> </ul>	Healey (2004: 60); Moradi (2005: 28)

#### 4.1. Case study

Municipal District 7 of the Tehran Metropolitan area covers an area of 1536.8 hectares, accounting for approximately 2.1% of the total area of the city. It ranks 15th among the 22 districts of Tehran in terms of size. This district is bordered by Districts 3 and 4 to the north, District 8 to the east, District 6 to the west, and Districts 12 and 13 to the south. Its boundaries are

defined by Sabalan and Majidiyeh Streets to the north, Mofatteh Street and Modarres Highway to the west, Damavand and Enghelab Streets to the south, and Resalat Highway to the north (Documents of the Municipality of District 7 of Tehran, 2019: 14). According to the most recent statistics from 2018, Municipal District 7 is divided into five subdistricts and 14 neighborhoods, as listed in Table 2.

**Table 2. Neighborhoods of municipal district 7 of Tehran (Documents of the Municipality of District 7 of Tehran, 2019: 19)**

District	Subdistrict	Neighborhoods
District 7	Subdistrict 1	(Shahed) – (Dehqan-Gorgan) – (Nizamabad)
	Subdistrict 2	(Kaj) – (Khaja Nizam-ol-Molk) – (Khaja Nasir-Haqoqi)
	Subdistrict 3	(Bahar) – (Amjadiyeh-Khaqani) – (Sohrevardi-Bagh Saba)
	Subdistrict 4	(Abbasabad-Andisheh) – (Niloofer-Shahid Ghandi)
	Subdistrict 5	(Majidiyeh-Dabestan) – (Qasr-Heshmadiyah) – (Aramaneh)
Total	5	14

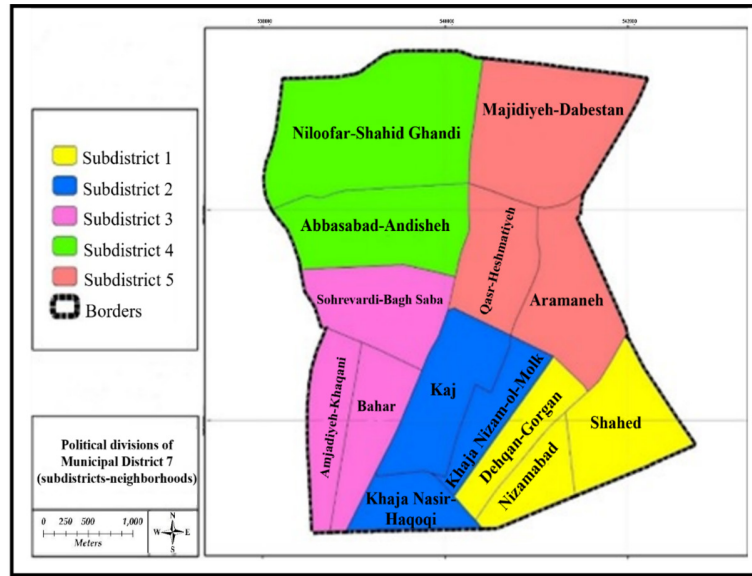


Figure 2. Political divisions of municipal district 7 (Documents of the Municipality of District 7 of Tehran, 2019: 23)

#### 4.2. Data Analysis

Using the DEMATEL model, this study analyzed the degree of influence (cause-effect relationships) of the dimensions and the visual management model criteria on improving the cityscape and city image quality of Municipal District 7 of Tehran. Table 3 presents the matrix of structural-managerial, socio-cultural, economic, physical, and environmental dimensions, along with 17 criteria derived from these dimensions.

In the table, R denotes the degree of influence on, C represents the degree of influence by, R+C indicates the importance of the criteria, and R-C shows the degree of relationship. Finally, based on the values obtained, the criteria were prioritized. Values with a positive sign indicate that the criterion impacts on, and those with a negative sign indicate that the criterion is impacted by.

Table 3. Criteria of the visual management model for improving the cityscape and city image quality of municipal district 7 of Tehran

Dimension	Criteria	Degree of influence (R)	Degree of affectability (C)	Importance (R+C)	Degree of relationship (R-C)	Priority	Type of effect
Structural-managerial	Urban management systems equipped with technical and specialized forces	0.32	1.87	2.19	-1.5	16	Influenced
Socio-cultural	Attention to people's perception and mental image of spaces	0.94	1.89	2.84	-0.9	14	Influenced
Economic	Public participation and private sector investment to achieve visual quality	1.21	1.8	3.01	-0.6	12	Influenced
Physical	Promoting continuity and connectivity among the city's main landmarks and spaces	1.58	0.0	1.58	1.58	1	Influential
Structural-managerial	Attention to structural and organizational integrity and coordination	1.02	0.01	1.03	1.01	2	Influential
Physical	Preserving and organizing historical fabrics	1.32	0.5	1.85	0.8	4	Influential
Environmental	Attention to the role of nature and green space in the city	1.4	0.4	1.8	0.9	3	Influential

Dimension	Criteria	Degree of influence (R)	Degree of affectability (C)	Importance (R+C)	Degree of relationship (R-C)	Priority	Type of effect
Physical	The connection of each space or building with other spaces (legibility)	1.52	0.6	2.16	0.87	5	Influential
Environmental	Environmental considerations in urban planning and architectural rules and regulations	1.46	0.8	2.27	0.7	6	Influential
Economic	Visual management for improving the quality of the image and landscape to respond to economic needs	1.33	0.95	2.29	0.38	8	Influential
Physical	Emphasis on preserving the identity of places and visual and aesthetic qualities	1.36	0.75	2.1	0.61	7	Influential
Structural-managerial	Connections between national, regional, and local strategies and policies	1.23	1.2	2.45	0.01	10	Influential
Physical	Emphasis on mixed uses	1.08	1.37	2.44	-0.3	11	Influenced
Socio-cultural	Educating citizens and setting regulations to coordinate facades in compliance with regulations	0.94	1.71	2.65	-0.8	13	Influenced
Socio-cultural	Increasing public attendance and improving the space quality in places where landscapes are perceived	0.62	1.2	2.7	-1.5	17	Influenced
Physical	Reducing the duality of the cityscape and city image in the eastern and western parts of the region	2.12	2.06	4.19	0.06	9	Influential
Structural-managerial	Observing visual criteria in urban planning and architecture regulations	0.87	2.25	3.13	-1.4	15	Influenced

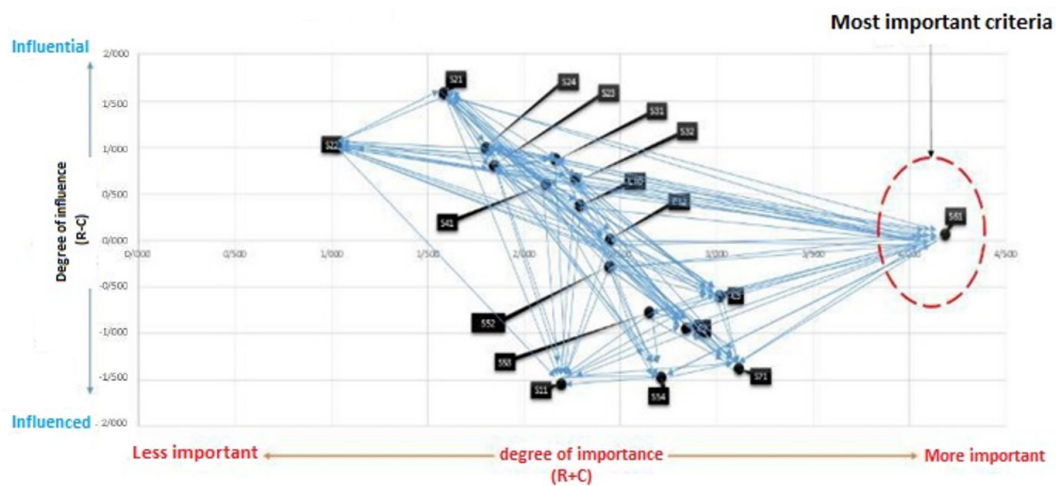


Figure 3. The influence relationship between the criteria

According to the DEMATEL model used for analyzing the influence relationship between the criteria of the

visual management model in improving the cityscape and city image quality of Municipal District 7 of Tehran,

the “Promoting connectivity and continuity among the landmarks and spaces of the city” (score = 1.58) and “Attention to structural and organizational integrity and coordination” (score = 1.01) were the most effective, while the “Increasing public attendance and improving the space quality in places where landscapes are perceived” and “Urban management systems equipped with technical and specialized forces” (both with a score = -1.5) were identified as the most influenced. The descriptive and analytical findings of the present study show the reasons for less attention to visual management in the cityscape and image of District 7 as follows:

- Disproportion between natural and built-up elements in the cityscape and city image of Municipal District 7 of Tehran;
- A lack of integrity and coordination between management organizations, such as the Supreme Council of Architecture and Urban Planning, the regional municipality, the district municipality, and neighborhood development offices;
- Inadequate consideration of visual criteria and guidelines in urban planning and architecture regulations;
- A lack of participation of the private, civil, and public

sectors in developing and implementing plans for the cityscape and image of Municipal District 7 of Tehran; and

- The preference for cost over quality among builders that negatively affects people’s perception and mental image of the spaces.

Figure 4 illustrates a proposed visual management model to improve the cityscape and image quality of Municipal District 7 of Tehran. This model emphasizes enhancing physical-visual and social-perceptual features, integrated urban management, and participatory planning, each with distinct components. “Physical-visual and social-perceptual features” include both natural and built-up elements, such as the role of green space in the city, attention to environmental considerations, the connection of each space with other spaces, attention to people’s mental image of spaces, compliance with visual criteria and considerations, and preserving the identity of places and visual qualities. “Integrated urban management” encompasses all physical, economic, social, environmental, and political aspects, along with coordination between management organizations. ‘Participatory planning’ involves people, associations, guilds, municipalities, and the government.

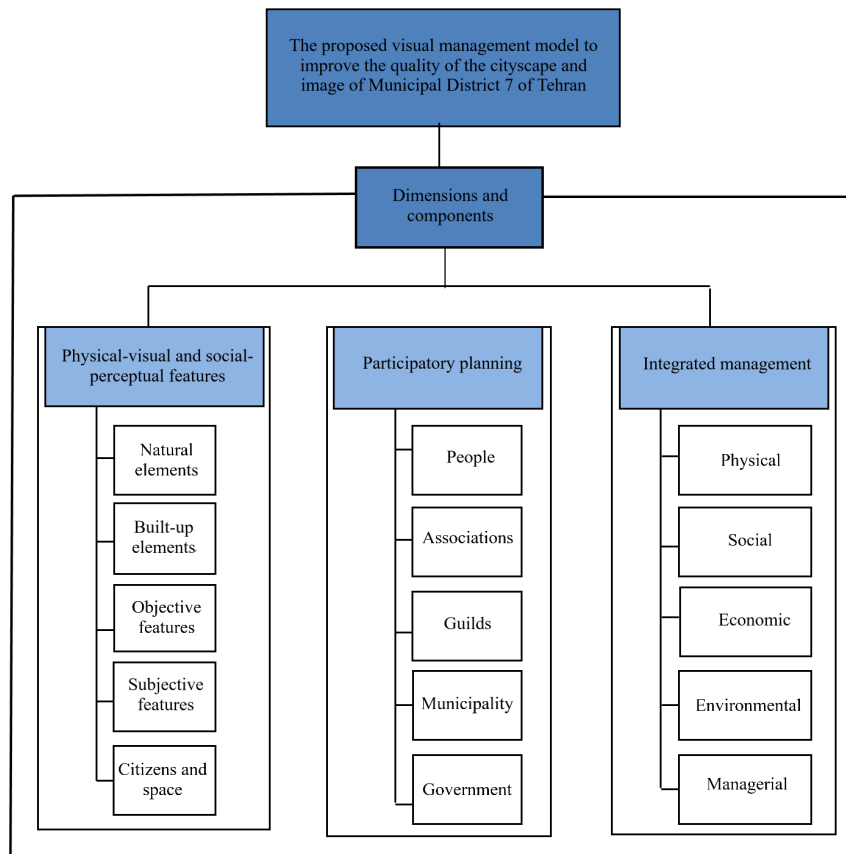


Figure 4. The proposed visual management model to improve the cityscape and image quality of municipal district 7 of Tehran

## 5. Conclusion

Today, the chaotic and cluttered cityscape of Tehran, especially in Municipal District 7, is a reality recognized by officials, professionals, experts, and the public. This disorderly cityscape contributes to numerous social, cultural, legal, ethical, psychological, and environmental issues. These problems include the objective landscape and citizens' perceptions and mental images, which are inevitable results of the chaos, anomalies, and deficiencies shaping urban development in District 7.

Many national and international studies have been conducted on this topic. Among international research, this study aligns with "Understanding Urban perception with visual data: a systematic review" by Ito et al. (2024), which reviewed numerous studies on visual perception across various cities. Regarding national research, this study is consistent with "Investigating the improvement of the legibility of cityscape on urban quality" by Yadollahi et al. (2024), who examined the readability of the cityscape as the most important indicator affecting urban quality. Notably, in all the research conducted, the cityscape and image were mostly addressed based on physical factors, with an emphasis on visual management. However, in the present study, in addition to physical factors, other environmental, historical, social, economic, visual-perceptual, and managerial factors are addressed. Municipal District 7, renowned as the most heterogeneous area of Tehran in terms of its form and physical diversity, has not been thoroughly studied in terms of visual management to date. This research is the first to analyze the cityscape and city image quality of District 7 with an emphasis on management.

Among the existing perspectives on the concept of visual management in cityscape and city image, a combination of physical-visual and social-perceptual approaches, along with an integrated approach to urban planning and management, was selected. The focus of this approach was the integration of the proportions of buildings and built-up elements within urban space, with the presence of humans and nature. Analyzing theories related to cityscape and city image, especially regarding visual management and data analysis using the DEMATEL model, revealed that visual management in District 7 has focused more on physical criteria in developing and implementing plans, while other environmental, social, economic, and structural-managerial factors should also be considered. A lack of attention to integration in visual

management has degraded the physical, environmental, socio-cultural, economic, and structural quality of the western and eastern parts of District 7. On the other hand, involving all stakeholders—including government, private sector, civil society, and residents—in visual management efforts is essential for improving the District's cityscape and image, while most plans are developed through a top-down approach by government authorities. Unfortunately, in most neighborhoods, the preference for cost over quality among builders, both objectively and subjectively, has declined the cityscape and city image quality in the entire district. Builders of residential, office, and commercial structures tend to prioritize economic gains over material quality, earthquake resistance, infrastructure, and other essential aspects. Furthermore, many buildings lack visual appeal, aesthetics, and overall attractiveness.

To achieve integrated visual management for improving the cityscape and city image quality of District 7, it is recommended to use the features of the physical-visual and social-perceptual approach. This means that urban design includes creating and improving urban spaces and places to achieve visual and functional quality standards. In fact, it is a combination of the proportions of buildings and built-up elements in the urban space, with the presence of humans and nature. In addition, it is essential to use the features of an integrated approach in urban visual planning and management. In the governance model, given the hierarchy of decision-making on the one hand and the different levels of development and construction programs and plans on the other hand, creating coordination between different levels is a requirement for a comprehensive and efficient management system. The governance model, and through it the strategic approach, addresses various issues that cannot be resolved only within the framework of a single area of responsibility. The necessity of communication between national, regional, and local strategies and policies requires establishing close relations between various planning departments and institutions. In addition, attention should be paid to the institutional nature of participatory planning and the social networks and their tendencies and interests in urban decisions.

To improve the cityscape and city image of Municipal District 7 of Tehran, with an emphasis on visual management, the following suggestions are presented:

- Establishing a balance between natural and built-up elements in the eastern and western zones and all

- neighborhoods of Municipal District 7;
- Observing visual criteria and considerations outlined in the urban planning and architectural regulations approved by the Municipality of District 7;
- Fostering integration and coordination among different levels of decision-making in the development and implementation of the plans for Municipal District 7;
- Preserving the historical values of Municipal District 7 by organizing and improving them in accordance with municipal guidelines;
- Promoting the participation of all stakeholders, including the private, civil, and public sectors, in the process of preparing and implementing visual management plans for Municipal District 7;
- Motivating builders to prioritize quality over cost to enhance citizens' perceptions of the spaces in Municipal District 7 of Tehran in both the eastern and western zones;
- Reducing the duality of cityscape and image in the eastern and western zones of Municipal District 7 of Tehran.

### Authors' Contributions

The authors have contributed to various parts of the article.

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### Conflict of Interest

The authors declare no conflict of interest.

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