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Explaining the Dimensions and Indicators of Walkability in Pilgrimage Cities with an Emphasis on Livability (Case Study: Najaf City).

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Abstract

This paper aims at presenting indicators of walkability in pilgrimage cities with an emphasis on livability. The case here is the central part of the City of Najaf in Iraq which is faced with a number of problems, including traffic and congestion, in the neighborhoods around the Shrine of Imam Ali. The study adopts a descriptive–analytical method and lies within the scope of theoretical and applied research. Data collection was performed through both library sources (books, scientific articles, theses, government documents, reports, journals, newspapers, and online databases) and field studies (questionnaires, observations, and interviews). The statistical population included residents and pilgrims present in the area surrounding the Holy Shrine of Imam Ali (AS), since they have the highest level of interaction with pedestrian-oriented spaces. Using Cochran's formula with a 95% confidence level, the final sample size was determined to be 384 participants.

For data analysis, SPSS software was employed along with statistical tests such as the Kolmogorov–Smirnov test, correlation coefficients, and the SWARA multi-criteria decision-making technique. The weighting results indicated that psychological and environmental dimensions had the greatest impact on the enhancement of environmental quality and urban livability. Among the evaluated indicators, "increasing tranquility and reducing stress among pilgrims," "reducing air and noise pollution," "improving pedestrian safety," "enhancing visual and aesthetic quality," and "reducing traffic congestion near sacred sites" ranked highest, together accounting for more than 40% of the total weight.

A one-way ANOVA confirmed that the difference between the mean weights of the main and secondary indicators was statistically significant at the 0.05 level ($p < 0.05$), highlighting the real influence of psychological and perceptual factors on environmental quality improvement. Findings revealed that pedestrianization in Najaf is not merely a physical intervention but a comprehensive strategy for regenerating the

city's religious and social identity, leading to a sustainable development of the City. By reducing traffic and noise pollution, improving aesthetic quality, and promoting social interaction, pedestrian pathways have significantly strengthened the sense of belonging and liveliness among pilgrims.
Emphasis on human-centered design principles and preservation of spiritual continuity can make pilgrimage cities such as Najaf exemplary models of calm, vibrant, and livable cities within the Islamic world.
Keywords: (Walkability Indicators, Pilgrimage Cities, Urban Livability, Najaf City).

تفسير أبعاد ومؤشرات قابلية المشي في المدن الدينية مع التركيز على قابلية العيش (دراسة حالة مدينة النجف)

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الملخص

تهدف هذه الدراسة إلى عرض مؤشرات قابلية المشي في المدن الدينية مع التركيز على قابلية العيش الحضري. وقد تم اختيار الجزء المركزي من مدينة النجف في العراق كدراسة حالة، لما يعانيه من مشكلات متعددة، من أبرزها الازدحام المروري والتكدس في الأحياء المحيطة بمرقد الإمام علي (عليه السلام). اعتمدت الدراسة المنهج الوصفي–التحليلي، وتندرج ضمن البحوث النظرية والتطبيقية.

تم جمع البيانات من خلال المصادر المكتبية (الكتب، المقالات العلمية، الرسائل الجامعية، الوثائق الحكومية، التقارير، الدوريات، الصحف، وقواعد البيانات الإلكترونية) إضافة إلى الدراسات الميدانية (الاستبيانات، الملاحظات، والمقابلات). شمل المجتمع الإحصائي سكان المنطقة المحيطة بالمرقد الشريف وزائريه (الحجاج)، لكونهم الأكثر تفاعلاً مع الفضاءات المخصصة للمشاة. وباستخدام معادلة كوكران وبمستوى ثقة ٩٥%، تم تحديد حجم العينة النهائية بـ ٣٨٤ مشاركًا.

ولتحليل البيانات، تم استخدام برنامجSPSS ، إلى جانب مجموعة من الاختبارات الإحصائية مثل اختبار كولموغوروف–سميرنوف، معاملات الارتباط، وتقنية SWARAلاتخاذ القرار متعدد المعايير. وأظهرت نتائج

الأوزان أن البعدين النفسي والبيئي كان لهما التأثير الأكبر في تعزيز جودة البيئة الحضرية وقابلية العيش. ومن بين المؤشرات التي تم تقييمها، جاءت مؤشرات :زيادة الطمأنينة وتقليل التوتر لدى الزائرين، تقليل تلوث الهواء والضوضاء، تحسين سلامة المشاة، تعزيز الجودة البصرية والجمالية، وتقليل الازدحام المروري بالقرب من المواقع المقدسة في المراتب العليا، حيث شكلت مجتمعة أكثر من ٤٠% من الوزن الكلي.

وأكد اختبار تحليل التباين الأحادي (One-way ANOVA) أن الفروق بين متوسطات أوزان المؤشرات الرئيسية والفرعية كانت ذات دلالة إحصائية عند مستوى($p < 0.05$) (0.05) ، مما يبرز التأثير الحقيقي للعوامل النفسية والإدراكية في تحسين جودة البيئة الحضرية.

وأظهرت النتائج أن تطبيق مفهوم المشاة في مدينة النجف لا يُعد مجرد تدخل عمراني مادي، بل يمثل استراتيجية شاملة لإعادة إحياء الهوية الدينية والاجتماعية للمدينة، بما يسهم في تحقيق التنمية الحضرية المستدامة. فمن خلال تقليل التلوث المروري والضوضائي، وتحسين الجودة الجمالية، وتعزيز التفاعل الاجتماعي، أسهمت مسارات المشاة بشكل ملحوظ في تعزيز الإحساس بالانتماء والحيوية لدى الزائرين.

ويُظهر التركيز على مبادئ التصميم الإنساني والحفاظ على الاستمرارية الروحية أن المدن الدينية مثل النجف يمكن أن تشكل نماذج رائدة لمدن هادئة، نابضة بالحياة، وقابلة للعيش ضمن العالم الإسلامي.

الكلمات المفتاحية: (مؤشرات قابلية المشي، المدن الدينية، قابلية العيش الحضري، مدينة النجف).

Introduction

The growth and expansion of urban areas today have led to individuals becoming dependent on motor vehicles for easier mobility within the city to meet their needs. This phenomenon in large cities, where the specialization of urban areas in terms of goods and services is evident, has led to an inevitability for people to use vehicles and the segregation of land uses. This issue, in addition to environmental problems, leads to increased consumption of fossil fuels, higher management costs, financial and social degradation, and a negative impact on the quality of life of residents (Nastran et al. 2023:18).

Although the idea of living and moving without a car in today's world might be difficult to imagine, let’s not forget that 150 years ago, there were no cars in cities. People and their walking movements brought life to the cities and allowed activities to flow within them. Gradually, the automobile dominated various aspects of human life, and human movement became increasingly automobile centric in this transformation. The use of public and private transportation increased, and the automobile became the main factor for urban transportation and commuting. (Hussein et al. 2021:3)

Urban spaces are considered some of the most important and dynamic places in human life and attention to the quality elements present in these spaces have varied throughout different historical periods based on the goals and desires of the city's inhabitants. What has been common in all ages is the presence of people and the existence of social relations governing them, which is considered the most important principle in the dynamics of urban spaces (Ghayabi and Mansouri 2020.189).

Walking is also one of the most basic and fundamental ways for people to get around. In an urban space, walkability is considered one of the most important indicators of livability and an effective tool in achieving sustainability of urban spaces for residents. (Rahnama and Bazargan 2020: 182)

The central fabric of cities has always been at the center of attention for specialists, planners, and urban managers due to its prominent role in the economic, physical, social, and political structures of the city. Although the historical emphasis on pedestrianism dates back to the beginnings of human life, in recent years, cities have increasingly focused on the importance of walking and the development of pedestrian pathways. (Saket Hassanlouei et al 2022:634)

Today, the City of Najaf is faced with traffic problems and crowding in the neighborhoods around the shrine of Imam Ali (AS), It should be noted that the Municipality of Najaf has taken positive steps, albeit small ones, to increase the livelihood by re-designing the streets around the shrine.

However, creating a joyful city in Najaf should still be among the priorities of urban management. This paper addresses the issue of pedestrian orientation and walkability from the perspective of a happy pilgrimage city approach that is effective in improving environmental quality.

"Theoretical foundations of pedestrianization and its relationship to the pilgrimage city"

Pedestrianization refers to the degree to which a place is conducive to walking. A pedestrian-friendly place is an attractive and desirable space for pedestrians, providing a sense of comfort, convenience and security (Nastaran et al. 2022:20)

Pedestrianism is the degree to which a built environment is suitable for people to visit, meet, spend leisure time, live, shop and enjoy in an area (Nosal, 2009:7)

Therefore, a pedestrian street is a street that prohibits the entry of vehicles in order to give priority to the pedestrian environment. In general, pedestrian streets refer to areas

or pathways designated for pedestrians, where motor vehicles are only allowed to enter for essential access and servicing purposes (Moeini & Ebrahimpour , 2020:103)

Table1: types of pedestrian street functions

Function of footpath	Description
Creating individual vitality in social life	Increasing emphasis on public functions and the pedestrian sector as a daily gathering place and a factor in creating social life
Increasing environmental quality	A tool for designing, guiding and developing the city's physical environment and improving the city's environmental quality. The entire network of pedestrian paths largely functions as an urban design framework and as a tool for guiding and developing the city's physical environment and improving the city's environmental quality.
Creating safe areas with mixed uses	Promotion mixed use instead of separating uses within pedestrian areas, focusing on the human community rather than individual users, and the existence of pedestrian areas as safe areas for children and the elderly.
Protecting the historic areas of the city	Pedestrianization of historic elements not only emphasizes historical relevance but sometimes also transforms it. Pedestrian zones encompass historic elements and old city centers.
Creating recreational areas with play spaces	Pedestrian areas as urban health parks are places for artistic and cultural events, spaces for play and spots for short breaks and relaxation.
Creating habitable environmental elements	The need to emphasize residential areas instead of non-residential areas when placing paths and to paying attention again to passage as a living space.
Leading to sustainable development	A factor in sustainable development, pedestrian movement and pedestrian paths promote physical and mental health, protect the environment and are a factor of sustainable socio-economic, cultural and political development.

The most important goals of any pedestrian system and development program are to provide safe pedestrian transportation facilities for the community, taking into account current and future needs and to encourage convenience, continuity, and access for individuals to use these facilities as much as possible. Other objectives that can be considered related to organizing and improving pedestrian movement include:

-Achieving the best and most appropriate urban transportation system
-Higher economic efficiency
-Improving social activities and relationships
- Improving urban traffic conditions
-Development of the public transportation system
-Protecting and improving the environment
-Energy savings

Among the purposes discussed regarding the pedestrian system, we can also point to the following:

-Identifying the current and future needs of the pedestrian system and prioritizing the construction and maintenance of pedestrian facilities.
-Improving the physical condition of pedestrian walkways (geometric. design, pavement, etc.).
-Enhancing pedestrian safety and reducing pedestrian accidents.
-Making pedestrian walkways suitable for people with disabilities (children, the elderly and the disabled).
-Improving related rules and regulations and informing the public about the rules and regulations through education,
-Improving the quality of pedestrian walkways (beautification, environment, hygiene etc.).
-Improving pedestrian system management
-Harmonizing the pedestrian system with the context such as the local culture and climate (Rezaei, 2021: 46)

Pedestrian streets

In the west, pedestrian streets first appeared in European cities in the late 1940s. After world War II, during the reconstruction era and the renovation of historic city centers, the idea of separating pedestrian and vehicle lanes was formed. The first Experimental experiences in creating traffic-free zones were created in the cities of Rotterdam

(Netherlands) and Stockholm (Sweden), in the late 1950s, private cars were driven out of the central and historic areas of cities due to the threat that European city centers were threatened by traffic and the destruction of valuable urban fabric so much so that by 1975, almost all important and historic cities in Europe restricted the entry of cars to a large part of their historic and central areas. Eventually, historic commercial pedestrian streets were formed in those areas (pakzed, 2005: 273). In table 2, a review of pedestrian function in different ages are shown.

For any decision to create a pedestrian walkway or pedestrian street in a city, it is necessary to consider the essential quality of the street as an urban space where residents' social interactions take place on a daily basis.

In this context, it is necessary to understand the relationship between the following features:

* Surface quality. The materials used in the construction of paths must be strong, sturdy, stable and slip-resistant. Designers must oversee the construction process.
* Efficient drainage: paths may collect and hold water. In such cases, pedestrians have no choice but to continue their travel on the road full of cars, thereby jeopardizing their safety.
* Inclusive access: paths should be designed to serve people in wheelchairs, with crutches, pregnant women, the elderly, and other people with special mobility needs.
* Safe connections: pedestrians need safe access to stations to transfer to other forms of transportation. Pathways should be connected and integrated into larger transportation networks.
* Attractive spaces: Interesting and dynamic paths that "make walking more attractive to people, ultimately facilitating more physical activity while reducing traffic congestion.
* Permanent security: At certain times of the day, fewer people walk, and insecurity arises due to the lack of watchful eyes on the street. we need to find ways to help city residents experience the feeling of being at home in the city.
* Clear signs: Pedestrians, like vehicle drivers, need clear information to both navigate the city and understand specific pedestrian rules and guidelines.

Obviously, these features can help urban planners and designers in pedestrian navigation. Walking, like many other human behaviors, is greatly influenced by cultural factors, individual circumstances, preferences, and environmental factors.

Urban designers should focus on those environmental qualities that create better places to walk.

Several studies have shown that the quality of the pedestrian physical environment is key to encouraging people to choose walking over driving (Jesus Lu, 2017:37)

Alongside the issue of pedestrianization, the issue of livability is raised. Today, livability is considered as a criteria to study cities' well-being (Solemani Lamiani et al. 2023 184).

It is one of the most important parameters that has gained a special place in urban planning discussions today Mekaoli Hache sou, 8Azar, 2018:272). This concept (livability or urban vitality) has been examined as a reflection of a personal sense of well-being, including all factors and elements that contribute to human satisfaction and it affects the issues of socio-economic and environmental quality of the city (Soleimani Lamiani et al. 2024:185)

Livability is also closely related to the development and transformation of functions. From this perspective, livability results from the desired urban form, the desired developed urban functions, and also effective urban activities. Therefore, livability, as a cognitive-perceptual phenomenon is a concept that encompasses urban space and refers to a more desirable and attractive spaces, which brings with it the ability to choose among all available social activities and cultural exchanges. (Jalaladini and oktay, 2011).

Livability also points to the way of interaction between elements at various levels: physical, social, cultural, and economic. Some of the key elements and foundations of the livable city include: opportunities for economic dynamism, socio cultural dynamism, public participation in planning and design, and bottom up management. (heydari, et.al,2023:156)

In other words, livability is a socio-spatial concept that is formed in the interaction between the city and the residents and reflects the dynamism of the everyday life of the residents in relation to their living environment. This permanent connection (between the city and resident) takes shape in the form of the accumulation of urban experiences and the creation of a sense of belonging to the urban environment (Nasri and hasankhani; 2016:39). Therefore, a lively urban area is a space in which the presence of a significant number of people and their diversity in terms of age and gender in a wide time span of the day whose activity is mainly manifested in a socially selective form, is visible.(Khasto and Saeedi Razvani 2010:66 , Seyed Begi et al.

2023, Abizade 2023, Saremi et al. 2023, Bakhshani et al. 2023, Amiri and Shams 2024, Dozduzani et al. 2025). Table3 shows the factors that create urban vitality.

Table3 factors creating urban vitality

Factors	Definition
Meaning	Meaning and semantics started from the semiotic system of language and extended to other systems, including architecture.
Sense of belonging	A sense of belonging place and connection between a person and their environment so that they know their environment and relate to it confidently.
Compatibility	Adapting space to human behavior that is formed in it over time.
Safety and Security	Safety and security are two categories that are strongly dependent on compatibility and can also be defined by it.
Transparency	Making space transparent in order to give it meaning and create a quality that allows social life to flourish.
Territoriality	Territory is a sense of ownership or belonging to a spatial area that many entail control or the right to use it.
Memorable	Two major and fundamental factors make an urban street memorable: first the evocativeness of an urban street meaning the presence of specific and distinctive functions concepts and physical features that are easily etched in the mind and second the arousal of positive emotions in residents.
Permeability	Only spaces that are accessible to people can give them the power to choose.
Variety	The goal of diversity is to increase choice but choice itself depends on mobility.
Flexibility	A powerful mix of spaces that can be used for multiple purposes gives their users more choices than spaces designed for just one type of use.
Richness of feeling	The sensory experiences of users of urban spaces in a way that provides them with pleasure create a quality that enhances people's power of choice and is called sensory richness.

Source: Faizi and Basiri 2019, 23

On the other hand, a pilgrimage city that comes to life with the presence of pilgrims, leads to the production of the spatial text of the pilgrimage. One can imagine this text as a narration on supply of accommodation services, shopping, the supply of catering services, health and other fields related to pilgrimage. The area encompassing pilgrimage compresses and expands at different times of the year.

The social and physical course of the pilgrimage area of the city also injects life into other urban areas and is a necessary condition for urban empowerment in order to provide adequate services to pilgrims (Saghaei et al.2012; 97)

In a holy place, the spiritual aspect of the pilgrim is highlighted and it has its own religious rituals. Beyond the holy place, the pilgrim is placed in direct action with the neighbors to meet his material needs (Saghaei 2004; 114). The provision of services to pilgrims and the use of such services by pilgrims revolves around the interaction and confrontation of the pilgrim and the proximate neighborhoods. The scope of the pilgrimage city is also defined according to the activities related to the services it provides to the pilgrims (Saghaei et al. 2012; 98). Therefore, the connection between the pedestrian circuit and the pilgrimage city is manifested in the concept of vitality of the proximate neighborhoods.

Research method

Data collection was done using library sources (i.e. books, scientific articles, theses, government documents, reports, magazines, newspapers, online databases) as well as field methods (i.e. questionnaires, interviews, observations).

The statistical population includes both residents and pilgrims of Najaf who were present in the area around the holy shrine of Imam Ali (as) at the time of the research. These two groups have the most interaction with urban and pedestrian spaces. Using the Cochran formula and a 95% confidence level, the final sample size was determined to be 384 people.

To measure the reliability of the questionnaire the “Cronbach’s alpha coefficient” method was used. The theoretical range of Cronbach’s alpha is from negative infinity to 1. The value of this coefficient for the research questionnaire was 0.81.

A value that is significantly higher than the threshold of 0.70, indicates a favorable level of correlation between the questionnaire items and consequently the reliability of the instrument used to collect data. The validity of the questionnaire was also examined through “content validity “.

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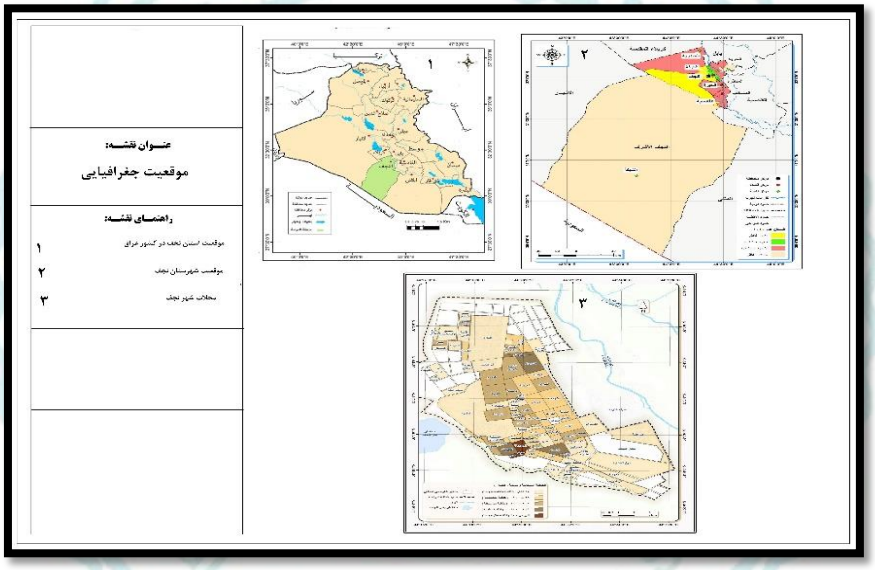
In this way, the content of the questionnaire was evaluated by a group of university professors and experts. Statistical analysis utilized SPSS software to examine variable characteristics: Kolmogorov-Smirnov tests assessed data normality, correlation coefficients evaluated relationships between dependent and independent variables, and the SWARA (step-wise weight assessment ratio analysis) technique calculated coefficients and importance levels for dimensions and components, aligned with expert and urban scholars' opinion from the sample.

It should be noted that the City of Najaf is located in the center of Iraq and borders Al-Anbar province to the west, Babil and Karbala provinces to the north, Diwaniyah province to the east and Muthanna province to the south.



Location of the City of Najaf

Analytical findings

In our sample, 52% of respondents were residents of Najaf and 48% were foreign or domestic pilgrims. Here, we used 20 variables which included environmental, aesthetic, functional and psychological indicators. These were weighted using the SWARA multi-criteria decision making method (table3). This method uses expert judgment to determine the relative importance of each indicator.

In the first step, the indicators were ranked based on the level of importance from the experts' perspective, then a relative comparison value Sj was determined for each indicator. Next, using the standard SWARA relationships, the adjustment factor

kj=Sj+1 and the final weight value qj=1/k*q-1 were calculated. Finally, by normalizing the (qj) values the final weight (Wj) was obtained for each indicator.

Results show that the most effective factor in improving the environmental quality of the City of Najaf, according to experts, is "the "tranquility" of pilgrims in pedestrian ways.

This index was ranked first with a final weight of 107. "Air pollution reduction", "pedestrian safety", and the "aesthetics and visual quality of the environment" were ranked as the most effective factors. The least important indicator was the "cleanliness of the urban environment", which despite its practical importance, plays a lesser role in the perceived vitality compared to other factors.

Qualitative analysis of opinions showed that many experts emphasized the psychological and spiritual impact of walking paths. According to them, the mental peace, safety, and the aesthetic experience of the paths play a key role in creating a sense of vitality in the pilgrimage area of Najaf and the proximate neighborhoods. Also, strengthening social interactions between pilgrims and residents through pedestrian-oriented spaces was recognized as a factor for improving the quality of life and environmental dynamics.

Table4: Weights of indicators based on the SWARA method

Row	indicator	relative comparison value	coefficient	weight amount	normalized final weight	rank
1	tranquility and reducing the stress of pilgrims	----	1.00	1.000	0.107	1
2	Reducing air and noise pollution	0.10	1.10	0.909	0.092	2
3	Improving pedestrian safety	0.13	1.13	0.804	0.086	3
4	Improving the visual quality and aesthetics of the environment	0.12	1.12	0.718	0.077	4
5	Reducing traffic congestion in the vicinity of places of pilgrimage	0.11	1.11	0.647	0.069	5

6	Increasing the social interactions of pilgrims and residents	0.10	1.10	0.588	0.063	6
7	Strengthening the sense of belonging to the space	0.08	1.08	0.545	0.058	7
8	Improving access to welfare services	0.07	1.07	0.509	0.054	8
9	Economic prosperity of local businesses	0.06	1.06	0.480	0.051	9
10	Facilitating the movement of disabled people	0.05	1.05	0.457	0.048	10
11	Improving the cleanliness of the environment	0.05	1.05	0.435	0.047	11
12	Improving the quality of furniture and green space	0.04	1.04	0.418	0.045	12
13	Increasing the stay of pilgrims in the city	0.04	1.04	0.402	0.043	13
14	Strengthening the cultural and religious identity of the space	0.03	1.03	0.390	0.042	14
15	Improving the cleaning of footpaths	0.03	1.03	0.379	0.041	15
16	Improving access to places of pilgrimage	0.03	1.02	0.372	0.040	16
17	Improving access to places of pilgrimage	0.02	1.02	0.365	0.039	17

18	Improving access to places of pilgrimage	0.02	1.02	0.358	0.038	18
19	Increasing the sense of security of pedestrians at night	0.01	1.01	0.354	0.038	19
20	General cleanliness of the environment and side paths	0.01	1.01	0.350	0.037	20

As table4 shows, indicators related to psychological peace of mind, safety and reduction of environmental pollution have gained the most weight. This may show that the perceived quality of the environment in pilgrimage cities depends more than anything on the sense of security, cleanliness and mental comfort. According to the views of the residents, the existence of pedestrian routes where pilgrims can experience the feeling of tranquility and peace, security and beauty has a direct impact on the vitality and environmental quality of the city.

From the perspective of policy analysis, the results indicate that urban planners should pay special attention to psychological and environmental factors in the design of pedestrian spaces in Najaf in order to increase the overall livability of the city. In the next section, we look at the concept of livability in the City of Najaf more closely.

Ranking of indicators in relationship to livability

After weighting the indicators above, this section presents the results of the analysis and final ranking of the indicators.

Data analysis showed that indicators related to psychological and environmental aspects, such as a sense of tranquility and peace, security and reduced pollution have the greatest contribution to improving environmental quality. Physical factors, such as road cleanliness and urban furniture, were ranked next. This result indicates that the pilgrim's perception of space plays a more important role than purely physical aspects.

The final weights showed that five indicators accounted for more than 40% of the total final weight. These indicators are:

1. Increasing tranquility and reducing the stress of pilgrims (0.107)
2. Reducing air and noise pollution (0.097)
3. Improving pedestrian safety (0.086)
4. Improving the visual quality and aesthetics of the environment (0.077)

5. Reducing traffic congestion in the vicinity of pilgrimage sites.(0.069)

The comparison between these indicators shows that the factor of tranquility and stress reduction is more effective than other factors in environmental quality. Experiencing peace on the pilgrimage pedestrian streets can strengthen the sense of vitally and belonging among pilgrims. Also, an indicator such as the cleanliness of the walkways has a secondary effect in creating the vitality of the space.

On the other hand, the coefficient of variation between the weights calculated for the indicators was about 23 percent which indicates a balanced distribution of importance among the indicators. In the other words, no indicator absolutely dominates the others, and all of them shape environmental quality in a coordinated system.

Table5: the final ranking of the indicators

Rank	Indicator	Final weight	Importance percentage (%)
1	Increasing tranquility and reducing the stress of pilgrims	0.107	10.7
2	Reducing air and noise pollution	0.097	9.7
3	Improving pedestrian safety	0.086	8.6
4	Improving the visual quality and aesthetics of the environment	0.077	7.7
5	Reducing traffic congestion in the vicinity of places of pilgrimage	0.069	6.9
6	Increasing the social interactions of pilgrims and residents	0.063	6.3
7	Strengthening the sense of belonging to the space	0.058	5.8
8	Improving access to welfare services	0.054	5.4
9	Economic prosperity of local businesses	0.051	5.1
10	Facilitating the movement of disabled people	0.048	4.8
11	Improving the cleanliness of the environment	0.047	4.7
12	Improving the cleanliness of the environment	0.045	4.5
13	Increasing the stay of pilgrims in	0.043	4.3

	the city		
14	Strengthening the cultural and religious identity of the space	0.042	4.2
15	Improving the cleaning of footpath	0.041	4.1
16	Improving access to places of pilgrimage	0.040	4.0
17	Suitable night lighting on the tracks	0.039	3.9
18	Strengthening stability and rest furniture	0.038	3.8
19	Increasing the sense of security of passers-by at night	0.038	3.8
20	General cleanliness of the environment and side paths	0.037	3.7

Analysis shows that the gap between the first and last indicators is less than 8 percent, which indicates the overall harmony of the indicators within the framework of the concept of urban vitality.

The statistical analysis of the weights obtained by one-way variance[1] analysis showed that the difference between the average weights of the main and secondary indicators is significant at the 5% significance level.($p<0.05$)

This result confirms that indicators with higher weights actually have a greater effect on improving environmental quality and that the difference between them is not a coincidence.

Overall, the findings are important for a pilgrimage cities such as Najaf, whose livability is based on the interaction of residents and pilgrims and their spiritual experience.

Conclusion

Pedestrianization serves not only as a practical measure but also as a comprehensive strategy in improving the environmental quality of pilgrimage cities. Weighting analysis of the indicators using the SWARA method indicated that components related to the psychological and perceptual dimensions of pilgrims, such as a sense of tranquility and calm, stress reduction, aesthetics and easy access to religious places, had the greatest effect on increasing vitality and improving environmental quality. This shows that the experience of pilgrimage on the pedestrian streets goes beyond mere physical improvement and is tied to the psychological, social and spiritual needs

[1] ANOVA

of the pilgrims. From a theoretical perspective, the results are also consistent with Jan Gehl's (2011) views on the human-centeredness of urban spaces; i.e. the design of pedestrian space should deal with the experience of social interaction. As a result, pedestrian pathways and streets in pilgrimage environments can be used to promote a sense of belonging, solidarity and religious identity among pilgrims and residents.

In the City of Najaf, the paths leading to the holy shrine of Imam Ali (AS) can become a platform for recreating the cultural and religious identity of the city.

These are spaces of collective experience in which physical components such as safety, cleanliness and visual quality are combined with mental components of peace, belonging and spirituality.

In addition, the consistency of the result of this research with studies conducted in religious cities such as Mecca and Karbala confirms that limiting vehicle traffic in pilgrimage areas is an important factor in increasing security, perceptual peace, and environmental vitality.

In general, it can be concluded that the pedestrian streets in pilgrimage context is an effective tool for realizing sustainable urban development from the environmental, social and cultural point of view.

These findings emphasize the need to develop human-centered design strategies based on religious and environmental identity so that pilgrimage cities like Najaf can become a successful model of livable, dynamic and vibrant cities in the Islamic world while maintaining their sanctity and tranquility. Based on the findings, suggestions include:

- Creating quiet and safe pedestrian streets: designing pilgrimage routes with physical separation from vehicular traffic using sound-absorbing materials and creating canopies to reduce stress and increase pilgrims' sense of peace and tranquility.
- Reducing noise and air pollution : Developing car-free zones around holy sites and using small electric transport fleets to transport pilgrims with disabilities.
- Improve night safety: installing smart lighting, surveillance cameras, and the increasing presence of security forces at night to reduce the feeling of insecurity on the paths.
- Improve vision and visual quality: the use of religious landscape design, artistic elements inspired by Islamic architecture and native plants to enhance the beauty and tranquility of the space.

- Traffic management in pilgrimage areas: implementing traffic restriction plans, organizing bus and taxi routes, and parking lots around the shrine to reduce traffic congestion.
- Encouraging social interactions of pilgrims and residents: design of semi-open facilities such as cultural passages, small cafes and rest stations equipped with collaborative furniture to strengthen the sense of social belonging.
- The impact of the access of disadvantaged groups: creating appropriate sloped ramps and visual and tactile signs on all footpaths for elderly or mobility-impaired pilgrims.
- Increase economic prosperity based on the pedestrian streets: organizing local business units of handicrafts and souvenirs in the paths of pilgrims in such a way that it is compatible with any religious identity of the space.
- Stabilizing the cultural and religious identity of the space: using signs, historical plaques and cultural elements to introduce the history and identity of Najaf and strengthen the sense of spirituality.
- Continuous monitoring and maintenance of the cleanliness of the paths: establishing municipal service units with daily cleaning programs and using light machinery to maintain visual quality and environmental hygiene.

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