

Original scientific paper

The Role of “Scale” on the Acceleration of Social Interaction in Urban Spaces

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ARTICLE INFO:

Article History:

Received: 8 March 2021

Revised: 25 July 2021

Accepted: 8 August 2021

Available online: 18 August 2021

Keywords:

Urban Space;
Obsolescent
Neighborhoods;
Social Interaction,
Evaluation Indicators;
Functional Scale.

ABSTRACT

Rehabilitation projects are interventions that can lead to the transformation of the socio-spatial structure of obsolescent neighborhoods. The main intention of such projects is the creation and/or improvement of social interactions after physical and functional interventions. Urban Renewal Organization of Tehran (UROT) is tasked with identification of target obsolescent neighborhoods, preparation of neighborhood development plans and implementation of rehabilitation projects to improve the quality of space and stimulate social interactions. In this paper, three urban spaces in different scales (“micro” for neighborhoods, “meso” for local and “macro” for trans-local scales), designed and implemented by UROT, were selected as a case study. By designing and filling a questionnaire and after analyzing research findings, the effect of the scale of the urban project on different activities was evaluated based on the Gehl model. Overall, in the expanded model based on the scale of space, an inverse ratio between the scale of space and both optional selective and social activities has been revealed.



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JOURNAL OF CONTEMPORARY URBAN AFFAIRS (2022), 6(1), 59-68.

<https://doi.org/10.25034/ijcua.2022.v6n1-6>

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1. Introduction

Obsolescent neighborhoods are considered as a part of urban structure in which poverty, deprivation, and failure of urban planning-management schemes have led to problems such as deteriorated buildings, service shortages and functional-physical ineffectiveness amongst others. These problems, in a chain process, intensify the obsolescence of local space and reduce the

livability in neighborhood. One of the significant problems of Tehran's Obsolescent neighborhoods is the lack of public spaces for social activities and interaction, which in turn

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weakens the relationship between local community members and their neighborhood. Public spaces are essential elements of the quality of life for cities and urban districts and provide public infrastructures and facilities for them (Duivenvoorden et al., 2021). Urban public spaces are areas where urban residents can engage in their daily life activities and participate in social interactions. In an urban public space, people can involve in various activities, communicate with each other, and share experiences (Ji & Ding, 2021).

The quality of life in urban spaces is the consequence of the relationship between the user and the space (Das, 2008). Urban spaces will function properly if they can operate as attractive places for social interaction. Since UROT regards urban public spaces as a platform for establishing social interactions, it employs the capacity of the Neighborhood Development Offices' (NDOs)¹ in the renewal process to that end. Accordingly, UROT has identified specific locations for the creation of public spaces. Hence, to find out about the causes of both strengths and weaknesses of urban spaces, it is necessary to examine these public spaces and evaluate their social effectiveness. In this article, three urban spaces have been considered and investigated as the case study. The selection was based on the case studies' distinct physical, functional and operational attributes in neighborhood, local, and trans-local scales.

The quality of space includes its social environment, civic traditions, cultural facilities, and recreational opportunities. Moreover, public space can be described as well-functioning if it contains physical qualities and semantic features and also encourages social interactions. This place presents as a brand for users and visitors (Reilly & Renski, 2008). Enhancing social interactions and a sense of community by providing comfortable, attractive and active streets, open spaces and parks which embed social networks, urban interactions, personal revitalization and other activities that create social bonds between individuals and groups are notable points in neighborhood development (Dunenberg et al., 2016).

Physical public space embodies struggles between different ideologies, discourses,

political decisions and routine activities taking place at personal, interpersonal, local, national, supranational, and global scales (Sadri, 2017). Pertaining to this, the principal aim of this paper is to investigate the importance of the functional scale of urban space in the quality of the relationship between users and space and also its effect on users' satisfaction.

2. Social interaction in urban spaces

Urban public spaces as natural or built environments include streets, squares, public paths (in commercial areas and residential neighborhoods), open spaces, parks, and public-private spaces easily accessible for most people at certain hours of the day (Rafieian & Asgari, 2000). Oldenburg considers "Third Places" next to homes and workplaces that host voluntary gatherings of individuals as a special form of public space (Oldenburg, 1989). Urban public spaces, as much as they are a way forward in the development of social justice, could be a factor for deepening social inequalities if not carefully planned and designed (Rafieian & Asgari, 2000). One of the approaches considered to revive the social life in obsolescent neighborhoods in recent years is the enhancement of their public spaces. Recent studies provide new evidence on the relationship between urban vitality and social cohesion in terms of: first, the role of the built environment in urban vitality; second, the role of the built environment in social cohesion; and third, the links between urban vitality and social cohesion (Mouratidis & Poortinga, 2020). According to Lang, patterns of social interaction have particular importance in urban public spaces. A study of more than one thousand urban public spaces in different parts of the world indicates that four basic factors have leading roles in measuring the quality of urban public spaces; namely accessibility and interconnectedness, comfort and quality of landscape, usage and activities, and sociability (Ghaed Rahmati et al., 2018).

3. Different levels of social interaction

In numerous publications, the urban spaces have been evaluated based on diverse models and various socio-spatial indicators. Gehl (2011), considering activity as the most

¹ NDOs are local departments in obsolescent neighborhoods which are established by UROT to facilitate the renewal process. For more information about NDOs, look at (Hajialiakbari, 2020).

critical factor of efficacy in urban space, defines social activity as a situation in which two people are simultaneously in one specific place, although the purpose of being with each other might vary. The meeting is somehow represented as a seed for inclusive forms of social activity (Hussein, 2018). Social activities are all activities that depend on the presence of "others" in public spaces. They can include greetings, discussions between people and routine activities of all kinds, as well as passive contacts like watching and hearing others (Zerouati & Bellal, 2020). Recognizing the relationships that community members have with their homes, surrounding spaces and neighborhood is becoming increasingly important as designers and city governments seek responsive and equitable design practices and management strategies (Klein et al., 2021).

These activities take place only when exterior conditions like weather and quality of place are suitable. This relationship is particularly crucial in physical planning because most of the pleasant recreational activities to pursue outdoors are found precisely in this category of activities. These activities are especially reliant on exterior physical conditions (Gehl, 2011) and can be classified into three categories:

- A) **Necessary functional activities:** These activities occur under any circumstances and regardless of physical qualities because people are forced to do them. Some examples are crossing the streets, going to school and workplace, etc.;
- B) **Optional selective activities:** These activities are sensitive to the quality of space and

occur only if there is an attractive and inviting place;

- C) **Social activities:** Activities that occur only when people are present in the space, such as watching, listening, meeting others, and active or inactive participation in the environment. Based on this group of activities, the concept of vitality can be delineated. A vital public space is a place that the presence of a significant number of people with diverse conditions (age, gender, etc.) engaging in mainly selective or social activities can be seen in wide periods of time.

According to Gehl's Model (Figure 1), different levels of activities may occur in public spaces, which can be regarded as an indicator of success in meeting users' needs. Based on this model, the existence of necessary and optional activities in urban spaces contributes to an increase in social activities, although the level of each category of activities is related to the scale of space. This paper expands Gehl's model based on the functional scale of urban spaces (in three case studies). Based on the aforementioned model, some criteria for functions of the spaces have been selected (Figure 2) and then, a questionnaire was designed to evaluate the quality of spaces for the aim of this paper.

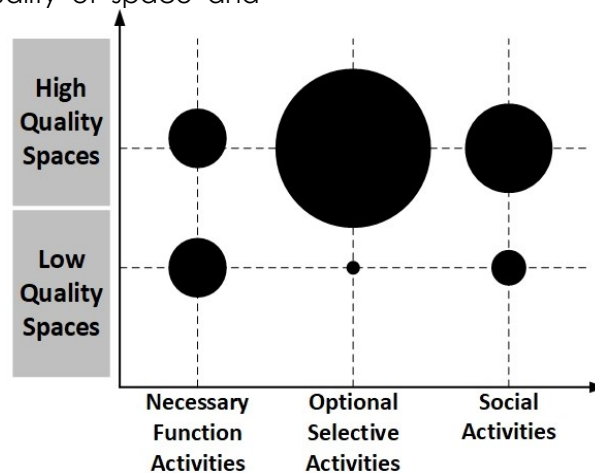


Figure 1. The impact of space quality on different activities (Gehl, 2011) .

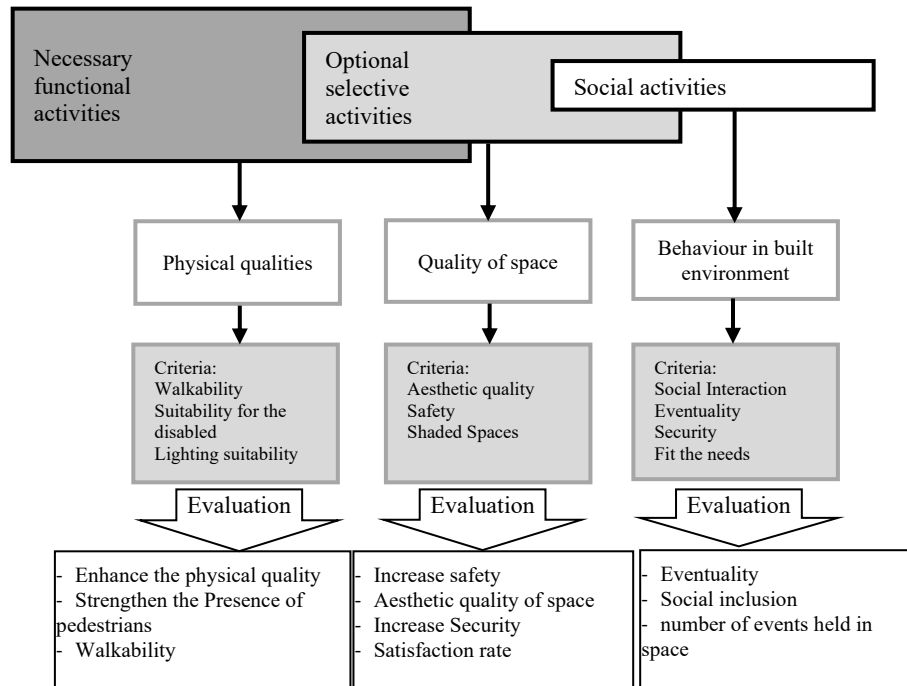


Figure 2. Conceptual model of the study.

4. Different scales of social interaction in case studies

Urban spaces prompt different behavioral reactions in users based on their functional scale. The presence of people in neighborhood-scale urban spaces which have pre-existing social relations in addition to familiarity with the spatial structure of the environment will be different from the urban spaces where users are from other neighborhoods.

The urban space projects that have been defined by UROT are mainly focused on obsolescent neighborhoods. According to the recognition of the neighborhoods' structure and diagnosis of their key weaknesses, UROT has undertaken physical interventions in public areas. These projects are based on the neighborhoods' social structure and service per capita status. Hence, several rehabilitation projects have been put into operation of which, three projects with different scales (neighborhood, local, and trans-local) have been selected for the aim of this paper. In the following part, the case studies' characteristics, methods of intervention and the satisfaction level of residents are presented.

4.1 Simin Neighborhood Centre (micro-scale)

"Simin neighborhood Centre" has been selected to compensate for the lack of public space, provide a playground for children, increase the possibility of public participation in

neighborhood, create a sense of belonging and organize an abandoned land in "Anbar-Naft neighborhood" in District 11 of Tehran. The project had an area of 400 square meters. Despite the appropriate potential, it has been abandoned; because the residents believed that while installing furniture, facilities, and equipment, an unsafe place would be created (Figure 3). However, based on the initial studies and negotiation with local community members, UROT decided to plan a safe and secure space that suits families and residents. To appraise the local community's needs and become acquainted with the intervention area, relevant information and opinions of citizens, officials and experts were elicited through questionnaires and face-to-face interviews; the results of which were considered as the main element in the design process.



Figure 3. Pre-intervention status of Simin neighborhood centre.

A field study of the problems in the intervention area indicated that the major issues were low levels of security (25%), lack of green spaces and inappropriate use of the space as a parking lot (27%); and environmental pollution (40%). Due to the poverty of the residents and inappropriate physical quality of the Anbar-Naft neighborhood, many primitive residents have left neighborhood, and current residents showed low levels of sense of belonging. These circumstances led to a lack of social integrity. In the status quo, the use of behavioral patterns in the space are related to the parameters of time and place; it means the least activity was observed before the afternoon, and after 4 pm, most behavioral patterns occurred in the form of a group sitting and children playing. In this small and micro-scale space, an attempt was made to make the best use of the space according to the needs of residents. For this reason, the intervention focused on re-organization of the space, improvement of the green spaces and creation of several places for neighbours to gather and children to play (Figure 4).



Figure 4. Simin neighborhood, proposed plan (Down), after implementation (Top).

4.2 Shirin-Dokht local space (meso-scale)

Shirin-Dokht intervention area covers 2700 square meters in the “Minabi neighborhood” in District 15 of Tehran. The area is the result of buying and merging 36 parcels in an obsolescent neighborhood by UROT in the previous decade which had been abandoned for many years (Figure 5). According to the interviews and surveys, residents classified their social problems into three groups: low levels of security, migration of primitive residents, and occurrence of disturbing activities within the residential neighborhood. They referred to the numerous indefensible spaces in the neighborhood as the basis for the presence of addicted persons and the main reason for unsafety. Also, the lack of sewage collection network, visual disorder and stench caused by garbage was a source of dissatisfaction among residents.



Figure 5. Shirin-Dokht local space, pre-intervention status (Down), intervention area site plan (Top).

In Shirin-Dokht case, local public space played a unique role in increasing the quality of the environment and improving the living standards of inhabitants. This role was performed by creating a spatial opening versus the dense context of the Minabi neighborhood and also by providing some of the necessary local service amenities of the neighborhood (Figure 6). According to a survey of citizens, solving security problems, creating an attractive and inclusive space for different age groups, providing a place for holding rituals and other gatherings, offering some of the neighborhood's recreational and cultural facilities and making a place for were requested. Therefore, elimination of non-observable corners, construction of playgrounds, provision of appropriate lighting, prevention of vehicles from entering the space, creation of visual diversity by using various colors, and construction of a building to organize vocational training and entrepreneurship courses were considered in the planning process.



Figure 6. Proposed plan (Down), after implementation (Top).

4.3 Amir-Kabir Plaza (macro-scale)

Amir-Kabir Plaza, with an area of 8500 square meters, is located in the "Shokoofe neighborhood" in District 14 of Tehran. The site was supposed to be a commercial complex. However, because of to the high density of population and buildings in the neighborhood and lack of any open spaces, additional studies were conducted and fundamental changes were made in the intervention plan. Hence, by allocating the area to an urban space, the prerequisite for the presence of citizens was provided. Moreover, part of the area was determined for the provision of necessary sport and cultural amenities (Figure 7).



Figure 7. Planning area, before the intervention.

In the Amir-Kabir Plaza project, a gross area of 1400 square meters was allocated to the construction of four buildings for cultural, sport, and recreational activities. In addition, 7,000 square meters open space was provided for diverse groups of users, in which various social events can be held (Figure 8).

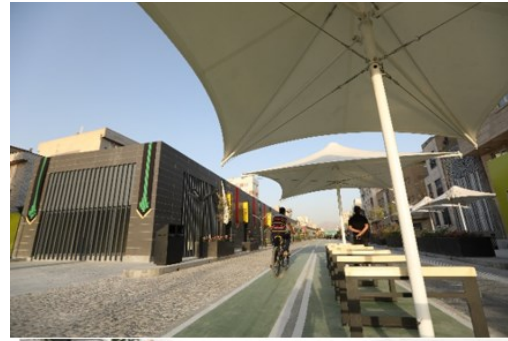


Figure 8. After implementation (Top), proposed plan (Down).

5. Findings

Analysis of the interviews and questionnaires shows that the time and duration of citizens' presence in urban spaces varies and is dependent on the functional scale of the projects. For instance, in neighborhood-scale projects users tend to stay longer in space (80%) in comparison with trans-local spaces (69%). Furthermore, results indicate that the length of users' presence in the space is directly influenced by the type of activities in the space. For example, children spend more time in a space where the playing equipment is available.

One of the criteria evaluated in this paper is the level of satisfaction of users from spaces in different scales. Researchers rate the satisfaction in three scales by the criteria such as satisfaction from the quality of implementation, ease of walking, security of space especially for the presence of women and children, the capability for hosting public and participatory events, visual quality of the landscape and attention to the needs of users. These indicators were assessed through a questionnaire completed by 30 users in each project (90 in total).



Table 1. Evaluation of social interaction criteria in Simin, Shirin-Dokht, and Amir-Kabir cases.

Criteria	Simin Neighborhood					Shirin-Dokht Local Space					Amirkabir Plaza				
	Very High	High	Mean	Low	Very Low	Very High	High	Mean	Low	Very Low	Very High	High	Mean	Low	Very Low
Satisfaction rate	40%	50%	0%	5%	5%	4%	42%	12%	13%	29%	19%	28%	22%	9%	22%
Increase the quality of the environment	25%	60%	10%	0%	5%	13%	33%	33%	17%	4%	16%	25%	31%	16%	13%
Strengthen the presence of pedestrians	30%	50%	10%	10%	0%	13%	46%	8%	25%	8%	31%	38%	19%	9%	3%
Increase safety	25%	50%	10%	15%	0%	8%	46%	13%	25%	8%	41%	34%	13%	9%	3%
Social inclusion	55%	40%	5%	0%	0%	38%	29%	29%	4%	0%	41%	34%	22%	3%	0%
Eventuality	35%	35%	15%	5%	10%	25%	29%	17%	8%	21%	9%	28%	16%	31%	16%
Improve the visual quality of the environment	65%	35%	0%	0%	0%	33%	46%	4%	4%	13%	63%	19%	16%	3%	0%
walkability	25%	60%	10%	5%	0%	0%	0%	21%	58%	21%	6%	25%	22%	31%	16%
Increase environmental security	15%	50%	25%	5%	5%	8%	9%	25%	4%	54%	3%	28%	19%	31%	19%
Fits the needs of users	5%	30%	10%	45%	10%	21%	25%	16%	13%	25%	3%	16%	44%	22%	15%

The results show that the effectiveness of the intervention is related to the scale of projects. On neighborhood scale, the sense of belonging is more noticeable, which can be attributed to the past familiarity with the environment. On the neighborhood scale, the presence of women and children is considerably higher than in other projects, which shows a sense of security in the space. This result can also be concluded from analysis of the "increasing security" criterion. The evaluation of the "satisfaction rate" criterion also shows that despite more facilities in Shirin-

Dokht and Amir-Kabir spaces, the satisfaction level in Simin is significantly higher than the others, which indicates the stronger connection between users and space. Also, in evaluating the improvement of the visual qualities of the environment, the highest level of satisfaction is observed in the Simin project, which can be attributed to a stronger connection between users and the environment and more familiarity with neighborhood-scale space in comparison with projects on larger scales.

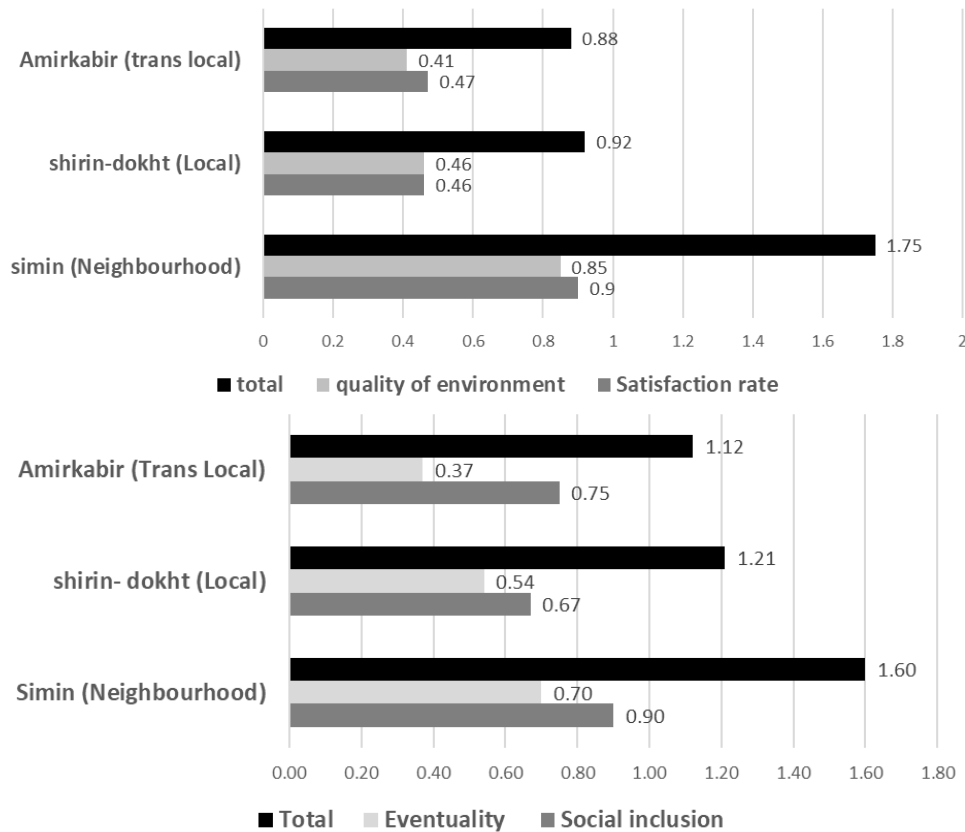


Figure 9. Tendency toward optional selective activities (Top) and tendency toward social activity in different urban spaces (Down) in different scales (Authors).

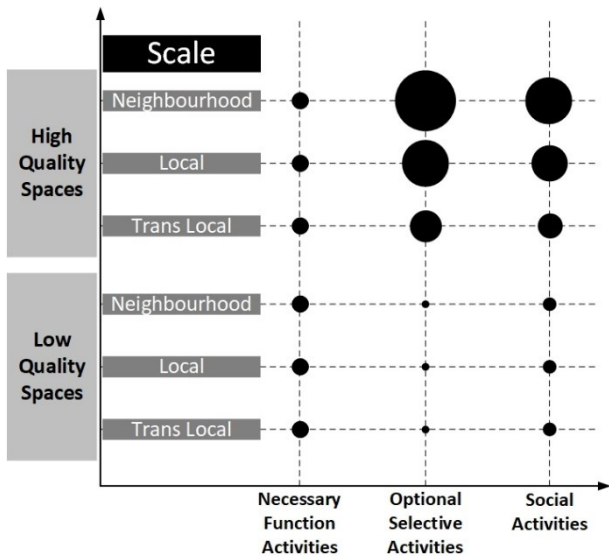


Figure 10. the impact of space quality on activities based on scales (Authors)

36% of users are not optimistic about the adaptation of the function of urban space with their needs at a trans-local scale; but there is 90% satisfaction rate in the neighborhood-scale project which is starkly in contrast with 47% and 46% satisfaction in trans-local and local-scale projects, respectively. The duration of users' presence at different hours of the day varies depending on the functional scale of each project. Results indicate that the time of users' presence in the space showed a direct relation with the functional scale of the space. Ultimately, the type of activities in space is also related to users' presence population.

6. Conclusion

In this paper, Gehl's model was expanded for urban spaces with different functional scales and the effects of scale on the efficacy of urban spaces was analyzed to be used as a tool in the prediction of the results of interventions. A review of the data that was obtained from the questionnaires and interviews indicated that there is an inverse relationship between the sense of belonging to the place and the project's functional scale. In addition, in the cases where there was a previous experience of the space by the users before the intervention, a stronger relationship between the new space and the users was recorded.

According to evaluated criteria on case studies and concerning the Gehl's model, two sorts of tendencies were observed: First, tendency toward optional selective activities, and second, tendency toward social activities. Subsequently, the relationship between

functional scale of public spaces and tendency to different activities was evaluated. According to the results of questionnaires, "satisfaction rate" and "quality of the environment" were selected as the key criteria for evaluating optional selective activities in different scales, whereas "eventuality" and "social inclusion" were selected for the evaluation of social activities (figure 9). As the results show, the tendency to use space for both optional selected activities and social activities has a reverse ratio with the functional scale of space.

According to table 1 and the relationship between the promotions of space quality in neighborhood scale, improvement of the quality of space has a significant effect on optional selective and social activities. For instance, some criteria like "social inclusion" and "eventuality" which are directly related to social activities have shown significant growth in the Simin neighborhood, but have reduced in Shirin-Dokht and Amir-Kabir spaces. In this framework, the Gehl model was expanded base on the scale (figure 10). In the expanded model based on the scale of space, an inverse ratio between the scale of space and both optional selective and social activities is shown, in which reduction in the scale of space leads to an increase in the amount of optional and social activities.

Acknowledgement

This research did not receive any specific grant from funding agencies in the public, commercial, or not-for-profit sectors.

Conflict of interests

The authors declare no conflict of interest.

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**How to cite this article:**

Hajialiakbari, K., Zare, M., & Karimi, M. (2022). The Role of "Scale" on the Acceleration of Social Interaction in Urban Spaces. *Journal of Contemporary Urban Affairs*, 6(1), 59-68. <https://doi.org/10.25034/ijcua.2022.v6n1-6>