



Analysis of Transformations in the Central Districts of Metropolises with Emphasis on the Spatial Integration Approach (Case Study: District 12, Tehran Municipality)

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Abstract

The increase in population in large cities and the development of urbanization have created numerous problems. One of the most important problems was the high population density in the central part of the metropolis due to the reasonable price of land and housing compared to other parts of the city. On the other hand, many uses changed in the central part, which caused confusion in the spatial organization of the elements. The characteristics of the "spatial integration" approach can play an important role in correcting the problems that have arisen in the central sector and its developments. The main goal of the research is to analyze the developments in District 12 in the central part of Tehran with a spatial integration approach. The research method is applied in terms of purpose, analytical in nature, and qualitative-quantitative in terms of method. The statistical population consists of 80 experts. The sampling method was non-probability and snowball type. The research data was collected through library methods. The data collection tool was a questionnaire with closed question. The DEMATEL model was used to analyze the data. The results show that the criteria of coordination between management organizations (13A), physical and regional exhaustion (12A), degree of social security (3A), and spatial coherence (7A) are also the first four criteria in the impact column and have been prioritized and ranked as the most important impact criteria compared to other factors.

Keywords: Transformations, Central Tehran, Spatial Integration Approach, District 12

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Extended Abstract

Introduction

Unbalanced urban growth driven by population increase has brought about a range of problems, including overlapping land uses, faster deterioration of urban fabric, social disorders, reduced public safety, economic instability, and other related challenges. These issues can clearly be seen in the changes taking place in the central area of Tehran, particularly District 12, and they underscore the importance of adopting a spatial integration approach. Applying the principles of spatial integration can help address these problems and steer the district's physical transformation in a more coordinated direction. Spatial integration is a key component of strategic spatial planning. To be effective, such planning must achieve integration in both scope and substance, take functional relationships into account, and involve actors across the public, private, and civic sectors. Unlike linear or strictly hierarchical systems, spatial integration depends on interconnected relationships—both vertical and horizontal—between different urban areas and elements. Although District 12 has considerable historical and economic importance, its problems currently overshadow its strengths. Without spatial planning that prioritizes integration, the district is likely to face serious and possibly irreversible consequences. Ignoring these challenges could trigger ripple effects across other parts of Tehran and pose risks to the city as a whole. A significant share of the district's deteriorated urban fabric is located in historical and residential areas, which has weakened its identity. In addition, there is a clear lack of both vertical and horizontal coordination, and the involvement of key stakeholders remains limited. The central research question of this study is: What criteria have driven transformations in District 12, which has historical, cultural, and economic significance, and why has spatial integration not been achieved?

Data and Method

This study is applied in its purpose and analytical in nature, seeking to examine the relationship between transformations in central districts and spatial integration. A mixed-methods approach was used, combining both quantitative and qualitative analysis. The research sample consisted of 80 experts from the District 12 Municipality, neighborhood development offices, and university faculty members in urban planning. A non-probability snowball sampling method was applied, in which initial participants introduced additional individuals. The process started with a small group and gradually expanded. Data collection began with a literature review to develop a thematic framework, identify key concepts, and examine relevant theories. Based on these findings, along with investigations into the district's geographic characteristics and lived experiences, an appropriate theoretical framework was selected. Structured questionnaires served as the main data collection tool. To assess the current state of transformations in District 12 and evaluate spatial integration, the DEMATEL model was used to analyze the influence and interdependence among the criteria.

Results and Discussion

DEMATEL analysis was used to examine cause-and-effect relationships among the criteria affecting transformations in District 12. The most influential criteria identified include attention to spatial dimensions in planning (6A), green space levels (4A), coordination among management organizations (13A), and spatial linkages across national, regional, and local levels (7A). These criteria are both highly influential and highly influenced, making them key priorities in planning interventions. The study also identified criteria with high net influence, including coordination among management organizations (13A), building deterioration and fragmentation (12A), social security challenges due to urban anomalies (3A), and spatial linkages across governance levels (7A). These factors are highly influential within the system and interact extensively with other criteria, making them essential for



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achieving spatial integration. Conversely, criteria such as regional land-use changes (8A), private sector investment willingness (5A), civic and public participation (11A), and environmental noise and visual pollution (1A) were found to be highly influenced by other factors.

Conclusion

Population growth and urbanization have caused substantial changes across environmental, physical, economic, social, and managerial dimensions. In District 12, most land uses were altered, and rather than promoting a mixed-use pattern, the area became primarily commercial and administrative. Spatial integration is crucial in guiding the physical transformation of the district. DEMATEL results indicated that of 14 criteria, 6 are influential due to higher scores, while 8 are primarily influenced due to lower scores. Therefore, the number of influential criteria critical for achieving spatial integration is fewer than those affected by other factors. Despite the ongoing transformations, significant efforts toward spatial integration in District 12 have been limited. However, the district possesses notable opportunities and potentials that can be leveraged to achieve integration and organize development in the central area. Based on the findings, the following recommendations are proposed:

- Integrate environmental, physical, economic, social, and managerial dimensions in District 12 development plans.
- Engage all stakeholders, including private, civic, and public sectors, in preparing development plans.
- Strengthen spatial linkages among neighborhood, district, and municipal levels.
- Improve coordination among management organizations operating within the district.
- Restore and preserve historical and valuable urban fabrics to reinforce identity and collective memory.
- Encourage private sector investment, leveraging the district's historical and economic assets.
- Address social challenges, improve security, and mitigate reputational issues in neighborhoods.
- Reduce environmental pollution, including air, noise, water, and soil contamination, across all neighborhoods.

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