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Analyzing the urban development of Isfahan districts in the housing sector using analytic network process (ANP)

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Extended abstract

1-Introduction

Development is a multidimensional and complex process that involves making changes in social attitudes and national institutions as well as accelerating the economic growth, reducing inequalities and eradicating poverty. Housing is considered as an integral part of development in a society. With its large economic, social, cultural, environmental, and physical dimensions, this sector plays a pivotal role in presenting the characteristics and improving the appearance of the society in general. Identifying and assessing the housing condition in a country depends on the detection and analysis of the factors affecting housing, which can be considered as guidelines for the resource allocation in

future planning and for promoting justice and sustainable development. Isfahan city, with a population of over one million people, is the third most populous city in the country and has fourteen districts. This research can help policymakers and planners alleviate the poverty, promote the social justice and formulate appropriate policies by looking into the indicators of the housing sector in the fourteen districts of Isfahan and their ranking using analytic network process.

2- Theoretical Bases

Housing is an extremely complex and extensive issue with different spatial, architectural, physical, economic, social, financial, psychological and medical aspects. As such, in this study various definitions have been proposed that, for example, deal with housing as a physical location and as a shelter, considering it as one of the basic needs of the households. In addition to the physical location, the housing includes the entire residential environment, which has various dimensions and goes beyond the physical shelter. Housing is the first unit of society and the most important

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unit of human settlements that represents the smallest unit of the planning. Most governments, in response to the importance of housing, incorporate the housing planning in national, regional and urban planning. The analysis of the housing indicators is one of the techniques that can help identify effective procedures in the field of housing. The indicators of the housing sector are the key to housing planning. The scope, complexity and diversity of housing indicators and their role in housing planning necessitate the classification of these indicators based on their role and performance. Housing indicators not only describe the current state of the housing in different aspects, but also they can be used to rank different districts and provide a clear picture of the housing in the past, present and future, leading to adoption of appropriate policies and strategies in the future.

3-Discussion

Indicators for the assessment of housing development in districts of Isfahan were determined based on a review of the literature on housing indicators and available data. These indicators were classified in three categories, i.e., economic, social and physical. The economic indicators included the extent of the state funds allocated to the housing sector, the rate of employment generated by the housing sector, the annual production capacity of housing for 1000 population, the share of different stakeholders (state and housing cooperative) in housing construction and land prices.

Social indicators include the availability of housing, the (annual) household growth rate, the need for housing (deficiency), the household density in residential units, the population density in residential units, psychological well-being (including the

average per capita housing and the average area of the residential units), the housing quality in terms of access to water and electricity utilities, welfare services, etc., the average building life, durable construction and renovation of old texture.

The physical indicators include the average building density, the average occupation density, residential density, the average area of building, per capita building, appearance and building materials (the ratio of housing units with resistant materials to the total housing), the ratio of malformed residential units to the total housing and the relative share of old texture.

It should be noted that the data associated with each of the above parameters were gathered separately for each area to be used in model process. In order to implement the analytic network process (ANP) model, we need to design a proper network model that includes the objective of the study as well as the main and sub-criteria (index) to perfectly address the research objective. In this model, the interdependence of the criteria and sub-criteria as well as the binary matrices in the model were analyzed using the ideas of experts to determine the final value of each indicator. Options (fourteen Isfahan districts) were also examined separately in the model and after final weighing, the indicators were proposed in terms of evaluation matrix.

4-Conclusion

The main criteria as well as sub-criteria considered in this study are both interdependent and interrelated. Moreover, in cases where the interrelation of the indicators is an issue, the analytic hierarchy does not include such relationship and may thus lead to the misleading results. In such cases, the analytical network can be used as an alternative. The application of analytical network process even in presence of

interrelated indicators does not interfere with the model. Thus, given the interrelation of the indicators in housing sector, analytic network process can be utilized.

According to the results of research on the final evaluation of indicators, the housing quality indicators in terms of access to sociocultural services, land price and the annual production capacity of housing for every 1000 people were the most important indicators of housing development in urban areas. Furthermore, the results of study on districts ranking based on the housing development suggest that District 1 ranked first by gaining the highest score (0.574) and Districts 6 and 5 rank second and third respectively among the urban districts of Isfahan. On the other hand, District 14 in the far north of Isfahan gained the lowest score (-0.719), ranking as the most deprived district of Isfahan.

5- Recommendations

In order to assess the urban development of Isfahan districts in the housing sector, after the compilation, analysis and assessment of the most important indicators and considering the nature of the housing development the assessment of which requires a variety of quantitative and qualitative indicators, and given the various roles and functions of these parameters in this study, a combination of ANP and Delphi methods were used as a technique for comparing these indicators. Then, drawing on the ideas of experts and professionals, the indicators were weighed. After determining the final value of each index using analytical network model, the assessment matrix was created to determine the extent of development of each district in terms of housing. The district with lower development scores fell into the lowest ranks, namely the deprived and highly deprived groups (Districts 7 and 14). These

areas need to take priority in poverty alleviation plans and the construction funds in coordinated policies should be allocated in fitting with the needs and requirements of such districts. It is because they have a larger number of negative indicators that need to be address properly. Detailed case studies and special plans such as organizing projects, development-oriented plans and specific economic plans aimed at alleviating poverty are among the strategies that can be proposed for these districts. The districts with higher development scores, however, need to take lower priority in terms of funds allocation, and maintaining the status quo should serve as a model for future planning. Further comprehensive studies still need to be carried out in the areas surveyed in this study with the aim of improving the structure, current state and housing quality in near future.

Key Words: Development, Housing Indices, Analytic Network Process (ANP), Isfahan.

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