

Analysis of Smart Indicators in Reducing the Physical Vulnerability of Urban Housing (Case Study: District 1 of Tehran)

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Extended Abstract

1. Introduction

Having house and shelter as one of the most essential human needs has always been at the forefront of human desire. Smart homes are of the latest achievements of the housing industry in the present era. Some of the most important features and capabilities of smart housing, welcomed by consumers are: security and safety, convenience, the ease of management, management and saving of energy consumption, the promotion of health promotion. In fact, the phenomenon of smart housing in our Iran in recent years, especially in Tehran, has been increasingly used by consumers, but different dimensions of this phenomenon have rarely been studied by academic centers. Therefore, the purpose of this study is investigating the phenomenon of smart housing and the impact of its indicators on reducing the vulnerability of urban housing in District 1 of Tehran.

2. Review of Literature

The concept of housing encompasses the entire residential environment, including all the necessary services and facilities needed for better family living and employment, education and health plans. In fact, housing plays a central role in protecting human beings and their property against natural and human disasters as the body of urban space.

The issue of protecting human lives, their belongings, urban facilities and equipment against natural and human hazards is so important that it has led to the formation of new approaches and theories such as smart housing in urban planning. In fact, smart housing is closely linked to the concept of security and safety derived from architectural materials and types. Today, we see the development and expansion of smart materials in the construction industry have been put on the agenda by planners and designers. Smart index is a new term for materials that are capable of understanding and responding to environmental events and processing them. Indicators of smart housing vulnerability assessment are: population density, building materials, age of residential units, residential units infrastructure, area faults, land slope, area land use, and roads of Tehran. Many international and national studies have been conducted to identify the benefits and applications of smart housing. Lobacarro, Carlucci, and Löfström (2016), Nguyen and Aiello (2013), and Robles and Kim (2010) examined the subject and the potential of smart home, feature and optimization of this type of home. At national level, there is no comprehensive research on smart housing so far. Only researches such as Sobhani Noodsheh (2016), Rahmani Node, Garoosi, and Garoosi (2015), and Taqvai and Ranjbar (2014) investigated the advantages of smart

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housing especially in the area of energy and housing management.

3. Method

The research method is descriptive-analytical according to the nature and goals of the research. The main purpose of this study was to identify and evaluate the impact of smart and new housing indicators on the physical vulnerability of urban housing in the Tehran area. To assess the research hypothesis, the opinions of 30 experts in housing sector were collected and analyzed by questionnaire. In addition, the physical vulnerability of residential units in district 1 of Tehran has been investigated to complement and improve the research work using data obtained from relevant centers using AHP hierarchy technique.

4. Results and Discussion

According to the descriptive and analytical data of the study, district 1 of Tehran was identified as one of the most vulnerable residential areas of Tehran against various disasters because of a very large fault in north of Tehran, its traditional and historical texture, high-rise, unprofessional constructions and high slope due to proximity of Alborz mountains. This means that most residential units in the Tehran are vulnerable and severely affected by natural and human hazards. According to eight smart housing indexes and expert opinions, fire alarm and smoke control intelligent systems index with 16% high score, 46% high score and 23% moderate rating had the greatest impact on the respondent community in reducing physical vulnerability of urban housing in the district 1 of Tehran. In order to answer the question whether the indicators considered in our study were effective in reducing the

vulnerability of urban housing, it should be said that the Welfare and Ease Index have the most direct and positive effect on reducing the vulnerability of urban housing.

5. Conclusion

The present study was conducted to determine the impact of smart housing on reducing physical vulnerability by citing scientific resources in one district of Tehran. In this regard, the question of the effect of smart indicators on reducing the vulnerability of urban housing in the study area was raised:

Studies using the AHP hierarchical approach have shown that many residential districts of Tehran District 1 are highly vulnerable and because of crossing a very large fault in the north of Tehran, its traditional and historical texture, unprofessional constructions and high slope due to closeness to Alborz mountains is one of the most vulnerable residential areas of Tehran against various disasters.

The results also show that smart indices have a positive and significant effect, either directly or indirectly, on reducing physical vulnerability of Tehran's urban housing. The most important and influential variable is security. In other words, all measures to reduce vulnerability are summarized in housing security and safety that require prompt action and attention of officials to improve it for citizens.

Therefore, it can be said that the definition and representation of smart housing, its acceptance and existence in the country and the study area, the impact of smart housing on physical vulnerability and so on are the most important findings of this study.

Keywords: Planning, Intelligent Housing, Physical Housing Vulnerability Vulnerability Indicators, District 1 of Tehran

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