World Academy of Science, Engineering and Technology
International Journal of Urban and Civil Engineering
Vol:17, No:09, 2023

A Quantitative Study on the “Unbalanced Phenomenon” of Mixed-Use Development in the Central Area of Nanjing Inner City Based on the Meta-Dimensional Model

Authors : Yang Chen, Lili Fu

Abstract : Promoting urban regeneration in existing areas has been elevated to a national strategy in China. In this context, because of the multidimensional sustainable effect through the intensive use of land, mixed-use development has become an important objective for high-quality urban regeneration in the inner city. However, in the long period of time since China's reform and opening up, the "unbalanced phenomenon" of mixed-use development in China's inner cities has been very serious. On the one hand, the excessive focus on certain individual spaces has led to an increase in the level of mixed-use development in some areas, substantially ahead of others, resulting in a growing gap between different parts of the inner city; On the other hand, the excessive focus on a one-dimensional element of the spatial organization of mixed-use development, such as the enhancement of functional mix or spatial capacity, has led to a lagging phenomenon or neglect in the construction of other dimensional elements, such as pedestrian permeability, green environmental quality, social inclusion, etc. This phenomenon is particularly evident in the central area of the inner city, and it clearly runs counter to the need for sustainable development in China's new era. Therefore, a rational qualitative and quantitative analysis of the "unbalanced phenomenon" will help to identify the problem and provide a basis for the formulation of relevant optimization plans in the future. This paper builds a dynamic evaluation method of mixed-use development based on a meta-dimensional model and then uses spatial evolution analysis and spatial consistency analysis with ArcGIS software to reveal the "unbalanced phenomenon " in over the past 40 years of the central city area in Nanjing, a China’s typical city facing regeneration. This study result finds that, compared to the increase in functional mix and capacity, the dimensions of residential space mix, public service facility mix, pedestrian permeability, and greenness in Nanjing's city central area showed different degrees of lagging improvement, and the unbalanced development problems in each part of the city center are different, so the governance and planning plan for future mixed-use development needs to fully address these problems. The research methodology of this paper provides a tool for comprehensive dynamic identification of mixed-use development level’s change, and the results deepen the knowledge of the evolution of mixed-use development patterns in China’s inner cities and provide a reference basis for future regeneration practices.

Keywords : mixed-use development, unbalanced phenomenon, the meta-dimensional model, over the past 40 years of Nanjing, China
Conference Title : ICUDTP 2023 : International Conference on Urban Development, Transformation and Planning
Conference Location : Singapore, Singapore
Conference Dates : September 04-05, 2023