Abstract

Housing affordability is one of the most pressing issues of urban development globally, and especially in developing countries. In Sudan, the housing provision system falls in between, land legislation and regulations, socio-economic structure of the society, and the state and private housing finance. This system produced a housing provision tiers based on income groups, high-income (first class), medium-income (second class), and low-income (third class) with land size and construction codes to suit the income levels. On one side, the literature suggests that basic housing is unaffordable for most Sudanese due to high construction costs. On the other side land value further increases the housing cost. The research examined the spatial determinants of residential land prices and the housing affordability index of 18 neighborhoods in Khartoum to explore their effect on Khartoum's physical expansion. To examine the spatial determinants, generally the research employs the Ordinary Least Squares [OLS], a non-spatial global model, and the Geographically Weighted Regression [GWR] spatial regression method for drawing spatial variations across the study area. The main research finding support the literature that suggest a medium-income household cannot afford their designated medium-income housing class, but they can afford the low-income housing class due to insufficient income. The OLS model explained 83% of the variation in residential land prices and 71% of the variations in housing affordability. The GWR on average explained 86% of residential land prices, and explained 90% of the neighborhood's housing affordability variation. However, the visual interpolation of the housing affordability suggest that a medium-income household have to meet their housing need on the periphery of Khartoum city, which create sprawling effect. The regression models indicate that plot prices can be explained depending on the explanatory variables; two models emerged with distance to secondary roads and average distance to the Central Business District [CBD] as mutual variables between both models, and average length of the plot's façade in the first model, while the average distance to police stations in the second model. Housing affordability is determined by the neighborhood class, distance from schools, hospitals, and the CBD. GWR models for plot prices and housing affordability have explained spatial variations by indicating the explanatory variables' weights on the plot prices and the affordability index. This research illustrates the dynamic and interconnected factors that influence land value and housing affordability, the indirect impact of urban planning on distribution of amenities and subsequently land value and housing preferences, how income can influence locational preference of housing and therefore the impact on the physical expansion of the city. The research also elaborate on the interdisciplinary nature of urban studies and how spatial analysis can complement quantitative urban studies.

Key words: *Land prices, Housing affordability, Regression analysis.*