

Development of a Fast and Cost Effective Geospatial Techniques to Monitor Real Estate Potential of Residential Manmade Islands in the Countries of the Gulf Cooperation Council

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Key words: Low cost technology; Professional practice; Real estate development; Remote sensing; Valuation; Landsat 8 OLI; Worldview 3; Pansharpening; Statud of Development

SUMMARY

Many GCC countries has adopted in the last two decades a policy of land reclamation as manmade artificial islands. The number of artificial islands intended mainly for luxurious and high standing residential purpose has significantly increased since then. Kingdom of Bahrain has four operational artificial islands and many under construction, the state of Qatar has one main one, while United Arab Emirates is a renowned for its Palm Islands. All of these Islands are built to play a significant role as recreational and touristic facilities. This study targeted the development of a quick, reliable and cost effective remote sensing based technique to evaluate the stage of development of artificial islands. In fact, while the cost of acquiring real estate properties in such islands is very high, many of them has not yet been fully occupied as construction work of new villas, apartment towers, hotels etc. Many realtors and real estate operators are clueless when it comes to assess and monitor the trend of development of such islands and where to advise potential buyers to invest. Landsat 8 OLI images was used to develop a quick and cost effective remote sensing based method to produce updated maps of status of development of five artificial island across the GCC. In Bahrain Amwaj Islands, Reef Island, Durrat Al Bahrain, Pearl Island in Qatar and Palm Jumeirah in UAE. The technique takes advantage of the nature of the land cover of artificial island which is uniform, homogeneous and very bright and therefore easily distinguishable even using Landsat-8 OLI imagery. A multithresholding technique combined with pansharpening allowed to extract the percentage of development for each island as a whole and map providing crucial information where the development is full and complete, implying more comfort and quietness and where there is still empty parcels which means construction will soon start. Worldview-3 Image was used for validation over two islands in Bahrain (Durrat Al Bahrain and Amwaj Islands) and the accuracy of results obtained using Landsat 8 image with the described technique were proved 90% match. This study addressed each artificial island as a whole, which gives the contextual environment to perform a determination of the value for each specific properties. Geospatial techniques are a

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crucial element for a more holistic business intelligence model for the vibrant real estate market in the GCC countries.

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