World Academy of Science, Engineering and Technology
International Journal of Urban and Civil Engineering
Vol:14, No:01, 2020

Dwelling in the Built Environment: The Resilience by Design in Modular Thinking toward an Adaptive Alternatives

Authors : Tzen-Ying Ling

Abstract : Recently, the resilience of dwellings in urban areas has been deliberated, as to accommodate the growing demand for changing the demography and rapid urbanization. The need to incorporate sustainability and cleaner production thinking have intensified to mitigate climate risks and satisfy the demand for housing. The modular thinking satisfies both the pressing call for fast-tracked housing stocks; while meeting the goal of more sustainable production. In the other side, the importance of the dwelling as a podium for well-being and social connectedness are sought to explore the key human/environment design thinking for the modular system in dwelling. We argue the best practice incorporates the concept of systemic components thinking. The fieldwork reported in this paper illustrates the process of the case study in a modular dwelling unit prototype development; focusing on the systemic frame system design process and adjustment recommendation hereafter. Using a case study method, the study identified that: (1) inclusive human dimensional factoring through systemic design thinking results in affordable implementations possibilities. (2) The environmental dimension encourages the place-based solution suited for the locality and the increasing demand for dwelling in the urban system. (3) Prototype design consideration avails module system component as dwelling construction alternative. (4) Building code often acts as an inhibitor for such dwelling units by the restriction in lot sizes and units placement. The demand for fast-track dwelling construction and cleaner production decisively outweighs the code inhibition; we further underscored the sustainability implication of the alternative prototype as the core of this study. The research suggests that modular thinking results in a resilient solution suited for the locality and the increasing demand for dwelling in the urban system.

Keywords : system prototype, urban resilience, human/environment dimension, modular thinking, dwelling alternative
Conference Title : ICSCSU 2020 : International Conference on Smart Cities and Sustainable Urbanism
Conference Location : New York, United States
Conference Dates : January 30-31, 2020