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## Building Evaluation based on Sustainable Development using Questionnaire System

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### Abstract

The current paper investigated the contribution of a better understanding of the building evaluation and its role for achieving sustainable development using existing researches. This paper evaluated existing researches on building assessment that used questionnaire in their investigations. The research was found to a relationship between existing researches, their results, methods and their questions.

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### 1. Building Evaluation

Various researchers investigated different buildings evaluation based on materials, applications, and etc. The current part is focused on description of many researches on building evaluation such as: Alnaser and Dlanagan (2007) investigated initiate implementing sustainable building construction in the kingdom of Bahrain, i.e. It highlights the main constrains that discourage such modern concept in building and construction. Three groups have been questioned using a questionnaire. These were the policy and decision makers, the leading consultants and the contractors. The main constrains of the dissemination of BIVP and BIWE, according to the policy and decision makers, were: lack of knowledge and awareness of the public in sustainable technology, low cost of electricity, low cost of gas and oil and difficulty in applying local environmental taxes. The consultants had attributed the constrains to ignorance of life cycle cost of PV and Wind turbines systems, lack of education and knowledge in sustainable design, political system, shortage of markets importing sustainable technologies and client worries in profitability and pay-back period. The contractors were found to be very enthusiastic and ready to take over any sustainable building project and prefer to have a construction manger to coordinate between the design and contracting team. Design and Build was found the favorable procurement method in Bahrain for conducting BIPV or BIWE projects. Paul and Taylor (2008) evaluated the comfort and satisfaction perceptions of the occupants of a green university building and two conventional university buildings

with a questionnaire that asked occupants to rate their workplace environment in terms of aesthetics, serenity, lighting, acoustics, ventilation, temperature, humidity, and overall satisfaction. The university buildings at the center of the study were located in Albury-Wodonga, in inland southeast Australia. The green building, which was naturally ventilated, was constructed from rammed earth and recycled materials. The conventional buildings have heating, ventilating, and air-conditioning (HVAC) systems and were of brick veneer construction. They found no evidence to believe that green buildings were more comfortable. Indeed, the only difference between the buildings was that occupants of the green building were more likely to perceive their work environment as warm, and occupants who felt warm were more likely to describe their work environment as poor. However, the cooling system of this building was malfunctioning at the time of the study and hence this result cannot be generalized as a difference between green buildings and conventional HVAC buildings. All other aspects of comfort, including aesthetics, serenity, lighting, ventilation, acoustics, and humidity, were not perceived differently by the occupants of the two types of building. Al Nsairat and Ali (2009) investigated the contribution of a better understanding of the concept of green building assessment tool and its role for achieving sustainable development through developing an effective green building rating system for residential units in Jordan in terms of the dimensions through which sustainable development tools were produced and according to the local context. Developing such system was becoming necessary in the Developing World because of the considerable environmental, social and economical problems. Jordan as one of these countries was in need for this system, especially with poor resources and inefficient use. Therefore, this research studied international green building assessment tools such as LEED, CASBEE, BREEAM, GBTool, and others. Then defined new assessment items respecting the local conditions of Jordan and discussed them with (60) various stakeholders; 50% of them were experts of sustainable development. After selecting the assessment items they were weighted using the AHP method. The outcome of the research was a suggested green building assessment tool (SABA Green Building Rating System), computer based program that suits the Jordanian context in terms of environmental, social and economical perspectives. Lax and Walker (2010) evaluated Life Cycle Assessment on rammed earth walls in the UK. The main aim of this research was BRE green guide for rammed earth walls. The rammed earth walls were under BRE –EPM (Environmental Profiles Methodology) 2008. The Life Cycle Assessment (LCA) method used ‘SimaPro’ software for their modeling. They were used the impact of each wall under 14 impact. They have used every ‘generic’ rammed earth wall scenario with score consideration of a Green Guide with rate of A+ although higher cement stabilization scenarios including eight and nine percent cement content were not considered. They evaluated three projects such as the ‘CAT WISE’ project, the ‘Living Classroom’ project and the ‘Pines Calyx’ chalk project. The evaluations have done using questionnaires. They have comprised stabilizing with cement for compressive strength with the environmental conditions. They also analyzed embodied carbon factors in various construction methods. Nguyen et al. (2011) evaluated vernacular housing designs and evaluates on the aspect of building physics. A new research methodology, which was adapted to the natural and social context of Vietnam, was proposed and applied. The process was carried out step by step, including: climate zoning, systematic analysis, in-situ survey and building simulations. The results of this study indicate that vernacular housing in Vietnam is creatively adapted to the local natural conditions and uses various climate responsive strategies. Through this study, the most frequently used strategies and their effectiveness were derived. The authors also found that under extreme weather conditions, traditional designs might not be sufficient to maintain indoor thermal comfort. Aziz and Shawket (2011) investigated the minimum parameters that were required to create vernacular urban spaces through proposing a new strategy for the slums upgrading projects by finding the similarities between vernacular urbanism and slums. Vernacular architecture is surely a contradiction in terms. The vernacular is the unconscious work of craftsmen based on knowledge accumulated over generations the very opposite of architecture, which involves a premeditated design process with a conscious appeal to the intellect. Yet, the term was convenient shorthand to describe an approach that adopts the spirit of the vernacular; if not its actual forms it is not intended to indicate a new style. In fact, many of the architects featured here reject the concept of style. Instead, describe their

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