FROM IKEA MODEL TO THE LEAN CONSTRUCTION CONCEPT: A SOLUTION TO IMPLEMENTATION

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Abstract
The productivity of the construction industry worldwide has been declining over the past forty years. One approach to improving the situation is by the introduction of lean construction. The IKEA model has been shown to be beneficial when used in the construction context. A framework is developed in which the lean construction concept is embodied within the IKEA model by integrating Virtual Prototyping (VP) technology and its implementation is described and evaluated through a real-life case implementing the lean production philosophy. The operational flows of the IKEA model and lean construction are then compared to analyze the feasibility of IKEA-based lean construction. It is concluded that the successful application of the IKEA model in this context will promote the implementation of lean construction and improve the efficiency of the industry.

Keywords
Construction industry, lean construction, IKEA model, virtual prototyping.

INTRODUCTION

Construction management and technology are two key factors influencing the development of the construction industry. Over the past 40 years, although several new and advanced construction technologies have been applied to construction projects, the efficiency of the industry has remained quite low (Guo, 2009; Koushki et al, 2005; Sacks and Goldin, 2007). For example, the productivity of the USA construction industry has been declining since 1964 (Teicholz, 2004). A similar decline in construction productivity has also occurred in other countries. Japan, for example, decreased from 3714 to 2731 Yen/Man/Hours over the period of 1990 to 2004. The main reason for this appears to be that the new technologies cannot effectively reduce the cost of design and construction while, at the same time, improving the management of the construction process.