Abstract:
At present, in buildings with different uses, what appears to be important in architectural design is the changes which occur after operation by user which are considered to be like the construction stage before operation without considering the design requirements. In design process, we face sudden changes which are not applied in other dimensions due to the traditional structure of design while they show off after operation and the changes become necessary. From this view, it is necessary to present a model following the design changes and seeks to remove them before operation. BIM predicts the possible changes in design, construction through integrating the building information in other building parts and reduces the post-construction and post-operation errors. With the growth of technology, most industries are improving while construction industry is moving slowly and develops based on traditional process with architects’ drawings or building planners. In reality, buildings have become more complex with new systems and change of contractors’ demands so that owners, architects and contractors impose some changes on buildings after operation to make the way parallel to new changes. This can make more problems for other parts of the building if the building information is not comprehensive. Therefore, there need to be more drawings by architects to solve the problems with integrated program in all stages of construction before operation. BIM makes it possible to predict other changes in case of change in a stage of design using data and various software programs which reduce the structural change after operation.

In fact, BIM is a new change in design method and documentation in construction industry which gives us information about the whole building with complete documents in database. All this information is parametric and related to each other. Every change in object in the model affects the project. BIM contains real information of building and is not consisted of -2D drawings of CAD. Regarding BIM benefits in construction industry, developed and developing countries have applied it in their projects not only in design and construction but also in post construction. In construction stage of a project consisting of design by consultants, construction and post implementation, the semantic information of building must be provided. BIM provides common architectural information with other dimensions of project and semantic knowledge based on ever modified method supporting the simple formal evolutionary changes and improvement. This improvement increases productivity saving schematic design time, design changes, design documents, control and coordination between different elements of projects before operation. In fact, BIM is considered to be an innovation for design, production and construction in pre and post stages of operation, implementation and execution compared with traditional design methods and moves towards humane activities rather than object-orientation.

BIM improves industry from project atomization towards integrated flow chart in which group process, computational abilities, networking and data accumulation in information and knowledge acquisition becomes maximized and errors are reduced. All these serve to simulate and apply reality-based models and reduce the perils in decision-making process while increasing quality and product in industry. In this model, contractor’s interaction with design group in multi-dimensional networks make it possible for contractor to participate project before construction and the errors are modified by contractor and group resulting in design improvement. BIM seeks to make compatibility with added layers of information helping to transfer the information between all those interested such as design group, owners and builders needing a method to share the project information in a wider scale. The aim of BIM is to enter everything in the model so that the building can be seen holistically. In the design trend, it is necessary to coordinate different trades in the building with a more precise approach in a shorter length of time.

The project construction is a process including design partnership with consultancy, construction and post-run (after the operation), in fact, semantic knowledge of the building must be provided, building information model, architecture shared with like other aspects of the project and ... structural and semantic knowledge of building provides a method based on continuous improvement approach, which supports the evolutionary changes simply and recovery. This improvement with time-saving of schematic design, design development
and changes, create design documents and project control and coordination between the various elements increases productivity in pre-operation. In fact, Building Information Modeling is an innovative way for design, construction in process of before and after the operation, implementation and management; compare with traditional methods of design.

The research at hand is of applied type trying to introduce a pattern to assess and improve the design stages of building in pre-operation stage to modify the errors based on weakness and strength points. Design simulation can be an important factor in the growth of architecture criteria meaning architectural space significance. If the understanding of these criteria has certain principles and quality and quantity trends are included in design backgrounds, there can be a way to standardize the design. The general aim of this research is to develop architectural design in pre operation to increase the efficacy of factors using BIM in final design of building. In fact, this pattern present the assumptions required for the designer in SWOT to reduce errors and the designer draws on BIM to respond the greater complexity, faster development and continuity of design processes. It is supposed that if BIM becomes applied in construction industry, there appears great development in different dimensions of costs, maintenance and operation of buildings.

Keywords: Effectiveness, Building Information Modeling (BIM), Improve, Design.