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Editorial for IJPM special issue on advances in building information modeling (BIM) for construction projects

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Editorial for IJPM special issue on advances in building information modeling (BIM) for construction projects

Building Information Modeling (BIM) can be defined as a set of interacting policies, processes and technologies generating a methodology to manage project information throughout the overall life-cycle (Succar, 2009), from the design phase, through the execution, till the operative one. Its adoption is recognized as adding value for information management optimization so the relationship with Project Management is becoming more and more interesting to identify their relationship and best practices for their perfect integration.

Right now, the main experiences of BIM implementation and development emerge in the civil sector but the potentialities of BIM make its application relevant and interesting even in all other engineering sectors, with special focus on Energy and Oil & Gas industries. Nowadays, academia widely investigated the potentialities of BIM and the main barriers to its development, as well as the level of maturity of BIM in construction projects in various countries often characterized by different way of working, different type of organization, different information management workflow and role in the project delivery chain.

The work environment in construction projects is transforming the conventional project delivery and management processes, mainly in the communication and coordination interactions among the project stakeholders (Grilo and Jardim-Goncalves, 2010). As a result, the management perspective of BIM is the key for the advances in BIM for construction projects.

Since, the adoption and use of BIM are still rather low for many countries, the first paper of this Special Issue focuses on the required motivations for BIM implementation due to the related contextual factors, namely, organizational capability and project characteristics (Cao et al., 2016). Four aspects of reasons have been selected through institutional theory and the innovation diffusion literature, such as, image motives, reactive motives, project-based economic motives, and cross-project economic motives. The motivations are rather complex and multi-dimensional in implementing BIM, which are associated with the selected motives. There is a positive association between project-based economic motives and BIM capability, while the project characteristics have significant impacts on project-based economic motives for BIM implementation. The research uncovers BIM implementation motivations may vary as organizational contexts change.

On the other hand, the managerial areas of BIM (MA-BIM) require a wider perspective of coordination and management, which should extend to organizational and legal strategies for BIM adoption and implementation as discussed in the second accepted paper (He et al., 2016). This emerge by a scientometric analysis that allow understanding the nowadays scientific community interests and perceptions on BIM issue. MA-BIM can be categorized into eight research clusters as per the scientometric analysis of the previous studies, namely, collaborative working environment, innovation, stakeholder/actor network, spatial visualized management, BIM adoption, culture or policy transmission, strategic and tactical-level management framework, and operation and maintenance. Subsequently, a conceptual MA-BIM framework is proposed revolving product, process, and people to enable appropriate environment for BIM management. It highlights insightful references for future research roadmap for the managerial aspects of BIM.

Taking into account the previous considerations, it seems evident that the advances in BIM should extend to its multidisciplinary inter-organizational collaboration practices. (Liu et al., 2016) identify eight influential factors for the collaborative design and

construction, such as, IT capacity, technology management, attitude and behavior, role-taking, trust, communication, leadership, and learning and experience. The successful collaboration will revolve around technology, people and process. The future development of BIM should focus on the trust and communication requirements, especially when coping with the organizational challenges that would hinder the collaboration.

The performance of construction projects can be improved via increasing the value through BIM platform. BIM-based value engineering Idea Bank has been developed in the fourth paper (Park et al., 2016). It intends to serve as a database for the past value engineering data. This is also a problem-solving tool, which is able to generate, simulate and manage value engineering ideas under BIM platform. The integration between BIM parametric objects and value engineering data into the database would extend the knowledge boundary of data management within BIM environments, where users could efficiently retrieve and reuse the related data for decision-making.

The Special Issue of IJPM on BIM gives evidence that the managerial aspects of BIM adoption are still at the exploration stage due to the unclear project delivery and management approaches even if the industry seems to have experienced the increased maturity of the technical aspects of BIM. The effective procurement system would determine the success of BIM-enabled projects (Chong et al., 2016). Nevertheless, the advances of BIM on its management aspects should be synchronized with the technical development of BIM. It will uphold the practicality and effectiveness of the management strategies. The outlook for the advances in BIM for construction projects remains challenging, which revolves around organizational chances, legal issues, stakeholders' relationship, project structure and implementation processes. These agendas or issues require further investigation along with BIM development.

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