ABSTRACT

The effective use of BIM in the design phase generates countless benefits, including contributions to enhance risk management. However, its adoption generates risks, and a better understanding of the critical success factors (CSFs) is essential for improving BIM implementation from the early design stage. The general objective of this thesis is to investigate the relationship between the BIM CSFs in the design phase and risk management. This thesis follows the model for scientific articles, and it consists of four articles. The thesis applies a qualitative and quantitative multi-methods research approach and is carried out through an exploratory and a confirmatory stage. The results indicate that BIM CSFs of the design phase have a positive impact on risk management, suggesting when effectively implemented, BIM can reduce threats and create opportunities during design development. Moreover, this thesis contributes to an important gap in the literature by investigating the relationship between risk management and BIM. In addition, to meet the challenges presented so far in BIM adoption, the research also contributes to identifying the CSFs of the design phase. For practice, results show that risk management is still not effective in engineering projects. Besides, it indicates that lack of knowledge or expertise in risk management, BIM, or both processes was the main barrier identified, revealing the need for better professional training.