Value Engineering Analysis in the Construction of Box-Girder Bridges

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Abstract

Bridges construction are one of the most challenging construction projects around the world as it necessitates a lot of engineering, experience, equipment, and a huge deal of money. Consequently, it is indispensable to consider appropriately how to direct the monetary total spent on such projects. Currently the selection process of bridge's superstructure construction methods in Egypt mainly depends on the experts' knowledge and experience without performing or applying a systematic procedure. Thus, the decision might not be the most suitable one as some important considerations could be neglected Recently, box-girder bridges are considered as one of the most common systems of Nile bridges constructed in Egypt and it is also widely used all over the world. There are many methods of the construction of box-girder bridges. Therefore in order to select the most appropriate construction method many factors should be well considered as site conditions, technology used, construction method characteristics and bridge physical characteristics. In this study, a machine learning model is developed to determine the most appropriate box-girder bridge construction method, applying the spirit of Value Engineering technique. Value Engineering is used for comparing the different construction methods for achieving the required basic function after considering the main significant factors and without affecting the desired quality.