Value Engineering in 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 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 bridgeôs superstructure
construction methods in Egypt mainly depends on the expertsô knowledge and experience without performing or applying
a systematic procedure. Thus the made 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 boxgirder bridges. Therefor 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 paper, a machine learning model is developed to determine the most appropriate box-girder bridge construction
method, using the Value Engineering concepts, which 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.

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