



Productivity increase in the design and construction of bridges

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Abstract

The construction industry is behind other industries in productivity. With more large infrastructure projects to be built, it is essential that design and construction could be performed with high productivity. This paper focuses on how standardisation of bridges can result in higher productivity. A quantitative study was performed to examine essential parameters that have potential to increase productivity in the Swedish bridge construction industry; it also examines how standardisation could increase productivity; and how specific incentives of the three significant actors (contractor, client and design engineer) could be obstacles to productivity. The main findings are that the actors believe in standardisation as a way to increase productivity. Reinforcement layout was one important parameter to increase productivity. Contractor's view on profit could be an obstacle to productivity. Increased productivity would be more sustainable infrastructure delivery and here the client has an important role to play.

Keywords: Productivity; Standardisation; Parameters; Obstacles

1 Introduction

Transport infrastructure is an essential part of developing society. The construction industry is also a significant contributor to the economy; globally, it accounts for 13% of the world's GDP [1]. It is also responsible for a significant part of the material resources used, representing 37% of the total CO₂-equivalent emissions [2]. At the same time, it is well-established that the construction

industry in many countries can be more productive. Research shows that productivity has decreased [3–5], or at least is much lower than the rest of the economy [6–8]. A research study in Singapore shows that the annual growth in construction productivity was negative in 2 of 7 years, and in 4 of 7 years, it was below the growth of the rest of the economy [9]. A study in Sweden indicates that the construction industry has had a cost increase, which is twice as high as other industries for the