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## Remedies for managing bottlenecks and time thieves in Norwegian construction projects – public vs private sector

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### Abstract

Reducing project execution time is an important aspect in today's construction industry. In practice, most construction projects are delivered behind schedule. This creates an incentive to find methods, processes and techniques to deal with elements which steal time and bottlenecks which cause delays. This paper address the magnitude, frequency and type of time-thieves and bottlenecks in various phases of construction projects from different construction firms and organizations in the public sector in Norway. It also discusses remedies to mitigate time thieves and bottlenecks. The questionnaire used was designed and tested to give a broad and open data collection. The purpose was to collect opinions from senior project managers and project members in order to identify time-thieves, bottlenecks and remedies and analyse the data to ascertain if there are common and/or different opinions or perspectives in public and in private sectors. This study will provide an insight into the problem, time-thieves and bottlenecks, itself. The firms in this study are part of a larger national programme called SpeedUp. The programme focuses on every aspect of speeding up projects. The SpeedUp programme is a 10 million USD research programme with 5 researchers and 7-8 PhD students. It is linked to Project Norway which is a research-based collaboration of Norwegian project-based organizations in the public and private sector.

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## 1. Introduction

Projects running behind schedule may serve as an indicator of poor productivity and bad project performance (Ramanathan et al., 2012). Any delay in a project may lead to cost and time overruns and these two are often related (Sambasivan and Soon, 2007). Delays can also cause increased cost, loss of competitive advantage and market share. Additional costs may be incurred through disputes and claims between involved parties (Odeh and Battaineh, 2002). When projects are delayed, they are either extended or accelerated and therefore, incur additional cost. Its common practice to keep a percentage of the estimated project cost as a contingency allowance in the contract price (Ramanathan et al., 2012). For the project owner; delays may lead to loss of revenue through lack of production facilities, rentable space or shortcomings with present facilities. For the contractor; delays may result in cost overruns due to a longer period of project work, penalties incurred, and higher material and labour costs (Assaf and Al-Hejji, 2006, Khoshgoftar et al., 2010). Given that utilizing time effectively and efficiently is one of the important factors determining the success of a project, understanding where time is lost, and the character of the bottlenecks are greatly important. Projects come across delays and unnecessary use of time due to various reasons, and hence suffer unfavorable consequences. To avoid or reduce the number of potential bottlenecks and time-thieves in a project it is crucial to have some data on the matter.

### 1.1. Causes of delays

Since delays in a project can have many unwanted consequences, and even a small success in delay recovery may have substantial impact on the financial returns for the interested parties of the project, it is important to address delay causes (Khoshgoftar et al., 2010, Faridi and El-Sayegh, 2006). Over the last forty years, significant efforts have been made to identify possible causes of delays (Yang et al., 2013). A review of project literature shows that causes of delays differs from country to country. Different factors such as the environment, working cultures, management style, methods of construction, geographical condition, stakeholders, government policy, economic situation, availability of resources, political situation as well as different perspectives of researchers can impact on projects and cause delays (Yang et al., 2013, Khoshgoftar et al., 2010). Ramanathan et al. (2012) proposes that there is no universal root cause. On the other hand, the literature review shows that factors causing delays in construction projects are mostly identical across developing countries, but with different rankings in terms of importance (Toor and Ogunlana, 2008). Analysis from Akogbe et al. (2013) shows that factors such as national income and GDP growth have a great impact on project delay. In developing countries financial difficulties are a common factor of delay. Other causes are similar for developed and developing countries (Akogbe et al., 2013).

### 1.2. Avoiding delays

Most of the theory (e.g. Pourrostan and Ismail, 2011, Sambasivan and Soon, 2007, González et al., 2014 etc.) focuses primarily on causes of delay. Despite existing methods that focus on schedule reduction, there has been a lack of discussions on specific procedures to overcome delays in projects; the focus being mainly on the cause and actions (Chan and Kumaraswamy, 1997). Keeping construction projects within approximate budgets and schedules requires clear strategies, good practices, and careful judgment (Pourrostan and Ismail, 2011). The basic strategy for preventing delay is to improve the contractor's ability to manage and administer the construction phase of projects (Yang et al., 2013). According to Sambasivan and Soon (2007), it is important that parties in construction projects avoid unrealistic contractual conditions and schedules. Akogbe et al. (2013) explains that avoidance of construction delay in developing countries may include the development and maintenance of planning, coordinating, controlling, organizing, and motivating program resources and supervising the component projects. It is suggested that the work should be awarded to the most successful bidder for execution and should be checked from time to time to ensure that the project is on schedule (Akogbe et al., 2013). Another suggestion is that that traditional building methods must be replaced by industrialized building systems (IBS), which could save on labour, cost and time of construction, and increase quality and durability (Alaghbari et al., 2007). In addition, greater attention must be paid to obtaining more accurate time and budget estimates from contractor (Mansfield et al., 1994).

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